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Abstract

In this paper we would like to showcase how party-mapping in a space drawn up by two or more politically relevant dimensions can be based on data created by Voting Advice Applications (VAA). Whether the suggested procedure and methods yield reliable and valid results across time and political contexts is still an open question. However, first results based on smartvote data stemming from their VAA for the Swiss parliamentary elections in the year 2007 look promising. With the help of the smartvote VAA data we were able to come up with meaningful party mappings as well as inter and intra party comparisons.

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Introduction[§]

The question of the nature of the ideological space[1] has long been of interest to political scientists. Scholars aiming to position political parties within the political space have adopted a number of different methods (Mair 2001). Commonly used approaches include the expert survey (Castles and Mair 1984; Huber and Inglehart 1995; Benoit and Laver 2006) or the elite survey (Kitschelt, Mansfeldova, Markowski, and Toka 1999; Warwick 2005; Hix and Crombez 2005). Another widely used method, popularized by the ECPR Party Manifesto Group (Budge, Robertson, and Hearl 1987; Budge, Klingemann, Volkens, and Bara 2001), is the coding of party manifestos.[2]

However, it is notable that most of the well-established methods for mapping the political space has focused on the political elite, i.e. on the supply side of political competition. Investigations into the political dimensionality of the demand side of electoral competition are remarkably smaller in number. This is unfortunate, given that the political dimensionality of elites is only one side of the coin. What is more, researchers interested in the ideological positions of the general populace so far have had only one instrument at their disposal: traditional surveys. In this paper, we want to explore the potential of a new data source for what Key (1964) has termed the "party-in-the-electorate", namely data from so called Voting Advice Applications (VAAs), Internet applications designed to help users make an informed choice about how to vote.

§ We would like to thank Jan Fivaz and Andreas Ladner (and the smartvote team) for providing us with the data from 2007 on which this paper paper is based.

1 To avoid redundancy, we use the terms ideological space and political space interchangeably.

2 Research on the Swiss ideological space has made use of a series of these techniques (cf. Hug and Schulz 2007 for an excellent overview and assessment of several of these attempts). Brändle (1999), for example, contributed to the literature by collecting the manifestos of major Swiss parties and coding them according to the rules given by the Manifesto Project. Basing on expert surveys, Huber and Inglehart (1995) and Benoit and Laver (2006) were able to position Swiss parties, in the former case on a single left-right scale and in the latter on a wider range of political dimensions. Kerr (1981), Ayberk, Finger, Garcia, and Sciarini (1991), and Ladner and Brändle (2001), on the other hand, mapped the Swiss political space by the use of elite self-placements on left-right scales. In addition to these well-established methods, political maps were generated based on media content analyses (Lachat 2008; Kriesi et al. 2006), partisan voting recommendations in referendum votes (Hug and Schulz 2007), parliamentary roll-call votes (Jeitziner and Hohl 1997; Hermann, Leuthold, and Kriesi 1999; Hug and Schulz 2007), or on communal votes on referendum proposals (Hermann and Leuthold 2003; Leuthold, Hermann, and Fabrikant 2007).

VAAs have become very popular in a number of European countries over the last few years, and increasingly also overseas. Given their deployment in the immediate run-up to elections, VAAs usually attract a considerable number of visitors, and thus generate a large dataset that includes the stated political preferences of citizens. As most VAAs also include a number of supplementary questions on party affiliation and vote intention, this extra information can help researchers to identify and map the ideological positions of VAAs users who support certain political parties or candidates.

The use of VAAs as a data-generating tool for mapping party supporters has a number of advantages and disadvantages. On the positive side, the generally much higher number of observations VAA data sets include compared to classic telephone surveys allows researchers to explore subsets of data (for example regional subsets). Second, when compared to telephone surveys, the anonymous format of a VAA may render respondents more likely to reveal their true preferences. Third, the use of VAA data for mapping purposes is relatively cost-free. Finally, VAA data allows a comparison of the ideological positions of rank-and-file party supporters with those of the political elite using the same data source. In particular, the VAA from which we will draw our data in this paper, the Swiss smartvote, includes self-coding by candidates. This offers us the chance to compare the ideological positions of party supporters with those of their party's candidates.

The main disadvantage of using VAA data is that users self-select into the sample. We thus have to tackle the question of whether the resulting lack of representativeness effectively precludes any valid inferences. However, by comparing our VAA data-based findings with findings based on more established methods (for example, telephone surveys) we can at least explore whether our method produces comparable results to those based on a (supposedly) more representative sample.

The paper is structured as follows. We first briefly discuss the results of previous studies on the nature of the political space. In the following section, we outline in more detail the pros and cons of VAA data for mapping the grass-roots party supporters, and then provide a short description of the tool we use as a data generator: smartvote. After a critical

assessment of the scalability of the two dimensions smartvote itself has offered, we apply a combination of inductive techniques to identify homogeneous measures of the latent political dimensions underlying the Swiss political space. The political map we derive is then compared to an analogous map based on a representative survey. In the final sections, we will then use the VAA-based map to investigate additional aspects, in particular the elite-mass ideological relationship, and compare our findings to previous investigations. We conclude with a discussion of the usefulness of VAA data for mapping the party-in-the-electorate.

The Nature of the Political Space

In their seminal work, Lipset and Rokkan (1967) described the historical European political space as structured by four basic cleavages – the center/periphery, religious, rural/urban, and owner/worker divide. Over time, these four cleavages came down to two in most countries: an economic one, dividing the pro-state left from the pro-market right, and a cultural one, dividing believing Catholics, believing Protestants, and/or the secularized (Lipset and Rokkan 1967; Kriesi, Grande, Lachat, Dolezal, Bornschier, and Frey 2006). However, mainly as a result of secularization, political competition after the Second World War was largely driven by economic issues, such as the development of the welfare state, economic redistribution, taxation, and government regulation of the economy (Bartolini and Mair 1990). Nevertheless, cultural issues have always remained salient, if only to a lesser degree.

However, with the improvement in standards of living, the rise of new social movements, and the collapse of communism, the cultural dimension seemed to regain strength (Inglehart 1977; Kitschelt 1988) and in many places even became the dominant source of party competition during the last decades to the twentieth century. This increase in salience was accompanied by a continuous transformation (or reinterpretation) of the original meaning of the cultural axis (Kitschelt 1994; Kriesi et al. 2006). While originally concerned with religious questions only, the cultural cleavage has come to be associated with a broad set of non-economic issues, including attitudes towards immigration, environmental protection, and governmental authority. In particular, Kriesi et al. (2006) argue that the process of

globalisation has led to the integration of issues such as immigration and EU membership into the pre-existing cultural cleavage. The structure of this cultural dimension varies considerably when compared cross-nationally. In some countries, it may refer, in part at least, to ecological concerns, in others it is oriented around traditionalism, and in still others the most salient non-economic conflicts pertain to questions of immigration and national sovereignty. It is because of this convergence of different issues that the cultural axis has been renamed the Gal/Tan dimension, with Gal representing green, alternative, and libertarian values, and Tan representing traditionalism, authority, and nationalism (Marks, Hooghe, Nelson, and Edwards 2006). Alternatively, Kriesi and Trechsel (2008) refer to the fundamental inherent conflict as cultural liberalism versus conservatism.

The Use of VAA Data for Mapping the Electoral Political Space

Voting Advice Applications (VAAs) are online applications that are typically launched shortly before landmark elections. They typically consist of at least thirty policy statements on which the the positions of parties or candidates have been coded, either by academic experts or by the parties and/or candidates themselves. Users provide their opinions, typically with respect to a four- or five-category Likert scale ranging from complete agreement to complete disagreement. The system then produces a rank ordering of candidates/parties according to the degree of overlap with the user's preferences. Many VAAs also collect supplementary data on users, such as their age, sex, educational attainments, religion, region, vote intention and party affiliation.

So far, VAA literature has mainly dealt with technical issues related to VAA design, such as statement selection (Walgrave Nuytemans, and Pepermans 2009; Lobo, Vink, and Lisi 2010), the coding of party positions (Trechsel and Mair 2011), or the effect of different matching techniques on the resulting party rankings (Louwerse and Rosema 2011). Only recently have scholars started to pose questions with a somewhat broader relevance, including the impact of VAAs on voting behavior, participation, and voter turnout (Garzia 2010; Ladner, Felder, and Fivaz 2010; Fivaz and Nadig 2010) or the extent to which MPs keep their promises made in election campaigns (Schwarz, Schädel, and Ladner 2011). However, the use

of the VAA as a tool to generate data from its users has been more limited. In particular, VAA data has not been extensively used for mapping the political space, the only exceptions being Kleinnijenhuis and Krouwel (2009), Talonen and Sulkava (2011), and Wheatley, Carman, Mendez, and Mitchell (2012). It is this gap that the paper intends to fill.

Many VAAs map parties or candidates on a multi-dimensional scale based on a number of salient policy dimensions. The logic of this method is to exploit the self-defined localizations of parties or candidates on multiple political issues and aggregate them to measures of political dimensionality. Put differently, what we are essentially engaging in is an exercise in latent variable modeling, whereby an individual's observed preferences on some policy issues are treated as correlates of some latent, i.e., unobservable, ideological dimension (Converse 1964). In principle, there are two basic approaches to this problem (Benoit and Laver 2012). Following a deductive logic, we can a priori define which items form a political dimension, for example, economic left-right. Alternatively, we can a posteriori employ inductive techniques to identify latent dimensions. Drawing on a written survey, Leimgruber et al. (2010) have recently employed such an inductive method to compare the ideological positions of Swiss voters and politicians.

Compared to the traditional instrument for inferring rank-and-file ideological positions, in particular the telephone survey, the main upside of VAAs is the wealth of data they generally produce, notably in the immediate run-up to elections and thus at a time when party competition is at its height. In contrast, analyses based on telephone survey data are often plagued by the naturally rather limited number of items they can use. Furthermore, the format of a VAA, in particular the absence of an interviewer may render respondents more likely to reveal their true preferences compared to a telephone survey. It is commonly known, for example, that it is difficult to elicit racist opinions in telephone surveys. Another beneficial feature of VAA data is that it allows for comparisons of the ideological positions of rank-and-file party supporters and the political elite *using the same data source.* The matching technique of a VAA makes it necessary to code the positions of parties and/or candidates on the same policy issues users have to answer. This coding is either done by independent

experts or by the parties/candidates themselves (or a combination thereof). Assuming these codings are reasonable, these pre-coded elite policy stances can be used for direct comparisons with the non-elite. Meanwhile, most existing studies aiming to make such comparisons draw on different data and methods for the demand and the supply side – and are thus naturally limited. Finally, a not insignificant merit concerns money. In contrast to representative surveys, data generation is not the sole purpose of VAAs. VAAs are conducted for various purposes, including the provision of political information and civic education, so we do not have to set up a VAA just for data generation. In many countries, the data exists anyway; hence it creates no extra costs when we use it to investigate political dimensionality.

However, due to the fact that respondents self-select into the sample, VAA data obviously has a problem with representativity (Pianzola/Ladner 2011). An obvious response to this problem is a rigorous weighting strategy, but we believe that weighting is unlikely to lead to the desired results, at least for the time being. This is because of the fact that weighting does not make much sense if the respondents belonging to a group to which we want to give additional weight are not representative of this particular group; and this is, for now, often the case when dealing with VAA data. Consider, for example, the quite small number of badly educated, rural pensioners with low income that fills in a VAA – these will often be rather atypical of their group. Giving them additional weight is thus likely to add additional bias.[3] Moreover the method we use in this paper to identify unidimensional scales, Mokken Scale Analysis, cannot be applied to weighted data samples, so weighting also limits the analytic tools that we have at our disposal for extracting meaningful latent dimensions.

Another alternative would be to randomly sample our dataset in order to extract a smaller sample that replicates the voting population at large in terms of vote intention and then to repeat the same analytic procedures on the new sample. Such an approach was recently used to explore the policy space generated by users of the Scottish Vote Compass, a VAA deployed prior to the 2011 Holyrood elections in Scotland (Wheatley, Carman, Mendez,

3 Meanwhile, one might add that surveys also have problems with self-selection. This concerns written surveys in particular, which formed the basis for Leimgruber et al's (2010) comparison of voters and candidates.

and Mitchell 2012). Applying the same methodologies of dimension extraction as used in this paper to i) the complete (clean) dataset of Scottish VAA users, and ii) to the smaller, politically representative sample, produced almost identical results. This suggests that our methods for dimension extraction are really rather robust and the lack of representativeness of our sample may, in fact, not prove a major obstacle for the type of analysis we are using.[4]

Overall, we believe that the representativity problem does not necessarily preclude the usage of VAA data to map the demand side of the political space. Another reason for our confidence lies in the fact that the demand side arguably is not determined by the public at large, but by a smaller subset of politically informed and interested citizens, in particular those that actually cast their vote. In Switzerland, where turnout in federal elections regularly fails to reach 50%, this is a relatively exclusive share of the total population. What we thus ideally need in order to map the "party-in-the-electorate" is a representative sample of actual voters. Needless to say that VAA data cannot achieve this, but neither can its main competitor, i.e., survey data. Due to social desirability bias, it is often next to impossible to identify true voters in surveys.[5] However, somehow paradoxically when considering their purported function, VAAs in general and smartvote in particular are accessed disproportionately often by well-educated, young and middle-aged voters (Ladner, Felder, and Fivaz 2010). The self-selection mechanism thus guarantees a rich, if not fully representative, sample of politically informed respondents who regularly cast their vote.

Smartvote

Since its launch in 2003, the Swiss VAA smartvote was offered to Swiss voters in the run-up to a series of national, cantonal, and local elections. The 2007 version (that we will use as data source) was designed for elections to the national parliament and, as usual, presented users with a personal political profile based on their responses to a battery of up to 73 items. These items either took the form of general policy statements, which made up the vast

4 It is the authors' intention to attempt this analysis also on the dataset that is the subject of this paper.

5 For instance, in a national survey conducted in Switzerland in 2007 (SELECTS 2007), roughly 69% of the respondents claimed to have voted in the federal elections, whereas the actual turnout rate was 48.9%.

majority of items (i.e., 63 out of 73), or of questions on government spending (the remaining ten). While users faced a choice between four answer categories in case of the policy statements (“yes”, “rather yes”, “rather no”, and “no”), they could choose among three answer categories only in case of the spending questions (“less”, “no change”, and “more”). In addition, users had the option of giving a “no opinion” and of weighting their responses. Finally, smartvote users were given the option of filling in an opt-in survey which asked for supplementary information including age, sex, education, income, religion, canton, vote intention and voting behaviour in previous elections. Meanwhile, all candidates in the parliamentary elections had previously been asked to fill in the same questionnaire. A remarkable 85% of all candidates made use of this possibility (Fivaz and Nadig 2010). After completion of the questionnaire, user responses were matched with the responses from candidates. The matching system works by assigning congruence values to each question for each candidate (Thurman and Gasser 2009). In the ensuing ranking of highest to lowest congruence (the “voting recommendation” in smartvote terminology), users could compare themselves with both single candidates and party lists. In the latter case, the matching was based on the median value of the responses of all candidates on a list.

In addition to the ranking of congruence values, the website allowed users to visually compare their political preferences with those of candidates. One of the graphic visualizations, the so called smartmap, could be of particular interest for our purposes. The smartmap allowed users to compare their placement on a two-dimensional political space with that of candidates and/or party lists. More specifically, smartvote assigned up to 65 out of the 73 items to one, or, in at least some cases, even both dimensions. The assignment of the items was based on previous research (Hermann and Leuthold 2003; Leuthold et al. 2007) which defined the Swiss ideological space as consisting of two orthogonal dimensions, in particular a left-right and a liberal-conservative cleavage. As a matter of course, it would simplify our exercise considerably if we used these ex-ante defined Likert scales, but we should not do so without an assessment of their scalability.

Examining the Ex-ante Defined Scales

Our examination of the a priori defined dimensions will be based on original user answers. However, our analysis will be restricted to those users who filled in the additional opt-in survey. This is done for two reasons. First, the opt-in survey contains additional information which we will need to map the positions of grass-roots party supporters. Second, and even more important, by considering only those users that provided the additional information, we automatically get a cleaned dataset. Many users used the tool more than once (Thurman and Gasser 2009) and many, as is usually the case with VAAs, may just have been experimenting with it. Unfortunately, the 2007 version of smartvote did not make use of techniques, such as time stamps or saving IP addresses, which would enable us to filter out potential "bogus" entries. Hence, the only way to avoid invalid entries is to restrict our analysis to those completing the opt-in survey, where a) it can reasonably be expected that experimenting users did not take part and b) that only the first and probably most sincere entry of those using the tool more than once was stored.

Based on the information that has been provided by the smartvote team, we were able to fully replicate the two original smartvote scales. However, in our analysis, we will leave out the spending questions and thus not consider the full set of 73 items.[6] We do this for three reasons. On the one hand, there are only three answer categories in case of the spending questions, compared to four for the policy statements. Including the spending questions would hence necessitate the creation of a by definition empty middle category for the vast majority of items – a relatively questionable endeavor. On the other hand, asking respondents about spending preferences without presenting a trade-off is often considered to lead to inconsistent answers (Hansen 1998; Gemenis 2012).[7] Who, for instance, does not want to spend more on education? And in fact, several of the spending questions are highly skewed and thus do a bad job at discriminating between political attitudes.[8]

6 The basic implications of the assessment of the scalability of the ex-ante defined scales remain the same if all items are included. The results including all items can be obtained upon request.

7 The problem with spending questions runs even deeper, as the presentation of a trade-off leads to double-barreled questions, which can also be problematic (cf. Gemenis 2012).

8 Dropping the spending questions still leaves us with 63 items and 7,887 complete entries, while the Pearson's correlation coefficient with the scales including the spending questions is roughly .99 for

Let us proceed to the assessment of the two ex-ante defined dimensions. When confronted with Likert scales, it is common practice to check scale reliability using a split-half test, such as Cronbach's alpha (Cronbach 1951). In order to be considered reliable, the alpha score of a given scale needs to exceed .7. It is accordingly a good sign in terms of split-half reliability that the Cronbach's alphas for the smartvote left-right and liberal-conservative axes equal .88 and .78, respectively.

Yet, a reliable measure is not always valid. The most important requirement for a scale to be considered valid is internal consistency, i.e., the items that form a scale need all be measures of the same latent trait (van Schuur 2003). In order to assess whether the smartvote scales can be considered unidimensional (or homogeneous), as a first step we apply a graphical technique that, while not a formal test, allows for an intuitive investigation of a scale's internal consistency. The approach builds on the central assumption that each item of a Likert scale is an ordinal-level function of the latent trait this scale aims to measure. It follows that if a Likert scale in fact measures a single common latent variable (and is thus internally consistent), each item must be monotonically related to all other items (Jacoby 1991). This means that, as the score of the latent trait increases, so should the score of each single item, and vice versa. Whether there are in fact such monotone relationships can be examined graphically by plotting each single item of a scale against the sum of all remaining items (i.e., the restscore), using locally adjusted (lowess) regression curves (for a more detailed description of this approach cf. Dinas and Gemenis 2010).[9] A scale can be considered internally consistent if the lowess curve of each item increases monotonically with the restscore.

Figures 1 and 2 show the respective plots for the ex-ante defined left-right and liberal-conservative scales, respectively. It becomes immediately obvious that both scales suffer from internal heterogeneity. In particular, at least three out of the 30 items forming the left-right scale (10, 32, and 52) are clearly not monotonically increasing with the restscores, while in

both the left-right and the liberal-conservative dimensions.

9 We use locally adjusted regression instead of item-rest correlations because there needs not be a linear relationship between a specific item and the latent trait.

case of the liberal-conservative axis, even ten out of the 31 items clearly have no monotone relationship with the latent trait (6, 9, 11, 17, 24, 25, 33, 37, 44, and 46). Part of the reason for the apparent problems with homogeneity may be smartvote's rather uncommon conceptualization of the two ideological axes, which goes back to earlier empirical work by Hermann and Leuthold (2003) and Leuthold et al. (2007). Specifically, the left-right dimension includes not only, as one would expect, items referring to the classic economic cleavage, but also some concerning law and order (e.g., item 51: "do you believe toughening the criminal law for juveniles is the proper way to halt youth crime?") as well as some on military defense (e.g., item 52: "do you support the deployment of the army in a support role to ensure internal security (WEF, EURO 2008, guarding embassies and consulates)?"). On the other hand, the liberal-conservative axis, while containing a series of items on cultural and political openness, immigration, or the army – issues that are commonly attributed to a GAL-TAN dimension – also includes items on liberalism in the economic sense (e.g., item 33: "do you support a minimum wage of 3,500 francs (for a full-time position) for all employees?"). Particularly with regard to the second dimension[10], this conflation of economic with GAL-TAN items seems the most important source of the problems with internal consistency: depending on one's interpretation, at least three, but possibly even six out of the ten items that clearly have no monotone relationship with the latent trait deal with economic issues (24, 33, 37, and possibly 6, 44, and 46).[11]

(Figures 1 & 2 about here)

Identifying and Measuring the Latent Political Dimensions

Having established the problematic nature of the ex-ante defined scales in terms of internal validity, we face a choice among two options: a) refining the ex-ante assignment of items in such a way that it better reflects the common interpretations of left-right and liberal-

10 Meanwhile, at least one out of the three problematic items on the left-right dimension clearly pertains to a non-economic issue, namely to the army (52).

11 In the more recent 2011 version, smartvote used an inductive technique called correspondence analysis to back up their political map. Nonetheless, the short methodological description (which can be found on the smartvote website) suggests that the smartvote scales continue to conflate economic and non-economic issues. It would thus be interesting to put the new scales to a similar test for internal consistency.

conservative and subsequently reassessing the new scales, or b) switching to ex-post, inductive techniques of dimensionality analysis and scale construction. For the present purpose, we will follow the latter approach. As the very nature of an inductive approach implies that we do not make any a priori assumptions about the dimensionality of the political space, the key challenge of this inductive scaling exercise lies in the identification of the number and substance of the latent dimensions (Benoit and Laver 2012).

To get a first feel for the dimensionality of the political space, we apply exploratory factor analysis (Thurstone 1947). Compared to other popular latent variable techniques, factor analysis seems advantageous as it allows for a relatively straightforward identification and labeling of latent dimensions. We base the factor analysis on polychoric correlations to do justice to the ordinal nature of the smartvote items. A total of 7,887 entries, from all smartvote users (not candidates) with complete answer sets to all 63 policy questions, are included. As a first step, we need to establish the number of dimensions in the political space, i.e., in methodological language, the number of factors to retain for rotation. A common practice is to employ the Kaiser criterion and to extract all factors where the amount of explained variance (the Eigenvalue) exceeds one. However, there exists broad consensus in the methodological literature that the application of the Kaiser criterion is inadvisable as it often leads to the extraction of too many factors (Velicer and Jackson 1990).[12] Thus, we use the scree test, which involves an examination of the graph of the eigenvalues against their serial order (Figure 3). We are looking for the so-called "elbow", i.e., the break point in the data after which the curve flattens out, and then keep the number of factors above the elbow (Costello and Osborne 2005). The screeplot suggests that this break happens at the third factor, and thus that the Swiss political space is best described as two-dimensional.[13]

(Figure 3 about here)

Table 1 shows the respective two-dimensional orthogonal varimax rotated factor loadings matrix on each of the 63 issue statements. The rotation aims at simplifying the

12 In the present case, the Kaiser criterion would suggest to extract six factors.

13 However, we nonetheless tested three- and four-dimensional solutions as well. Both the three- and the four-dimensional solutions lead to rather messy factor structures with lots of crossloadings and substantially meaningless extra dimensions.

interpretation.[14] Compared to the ex-ante defined dimensions, the extracted factors more closely resemble the common conception of the ideological space of a West European country. The bulk of the items with strong loadings (>.4) on the first factor refers to what we will call the cultural or the social liberalism-conservatism divide, including items on immigration (13-17), cultural liberalism and traditionalism (6, 18, 19, 20, 25), law and order (9, 51, 58), the army (53, 55, 57), political and economic integration (60-63), and democratic reform (50). On the other hand, the items with strong loadings on the second dimension can mostly be attributed to the classic economic left-right cleavage, including in particular questions on the welfare state (1, 2, 3, 7), economic liberalism (23, 24, 33, 34, 36-39), as well as on budget and taxes (27, 28, 31). Meanwhile, it is noticeable that most of the items with a reference to environmental protection either have strong crossloadings (41, 43-45, 47) or are attributed to the economic dimension (11, 46). Only one environmental item dealing with the introduction of road pricing (40) clearly loads on the cultural dimension. It seems thus that ecological issues are not clearly affiliated with the cultural dimension in Switzerland, contrary to many other European countries (Marks et al. 2006). Rather, the high number of ambiguous items suggests that ecology runs along the diagonal of the political space, meaning that the continuum of support for environmental protection ranges from right-conservatives (the no side) to left-libertarians (the yes side), effectively mirroring the conflict line suggested by Kitschelt (1994). There are, however, also a few items with strong crossloadings that have no reference to ecology (in particular 7, 8, 31, 35, and 39).[15] A final thing to note is the very considerable uniqueness values of roughly a third out of the 63 items, which indicates that these variables probably do not belong with any of the two dimensions. We may, in other words, be better off not including these variables in the measurement of either left-right or

14 While the orthogonal varimax rotation applied here assumes that the extracted factors are independent, many suggest using oblique rotations to allow for some correlation between the factors. However, an oblique promax rotation produces essentially the same results, which suggests that we are in fact confronted with two nearly independent dimensions, which can subsequently be treated as independent.

15 The crossloadings make sense on substantial grounds in at least some of the cases. Consider, for instance, item 39 (public contracts should favor Swiss companies), which can be seen from both a standpoint of economic liberalism (i.e., minimizing governmental interventions into the economy) as well as from one of demarcation. Similarly, the weakly crossloaded item 6 (subsidizing daycare centers) can be seen through the eyes of both support for a built out welfare state and resistance against the modern way of life (i.e., traditionalism).

liberal-conservative scales. The fact that most of these were part of the ex-ante defined scales could well constitute an additional reason for them to suffer from internal inconsistency. In sum, the factor analysis confirms our skepticism against the conflation of economic and non-economic issues in the ex-ante defined smartvote scales. Not one of the economic items that were ex-ante assigned to the cultural axis seems to have a clear association with it. Conversely, none of the military defense or law and order items that were attributed to the economic cleavage actually seem to fit this dimension.

(Table 1 about here)

A straightforward strategy would now be to directly use the information we have gained for mapping the Swiss ideological space by calculating the factor scores for each of the two dimensions. However, this approach is problematic due to the different frequency distribution of the various items, which points to a hierarchical relationship amongst the items. To give an example, item 60 , which refers to EU accession (mean = 2.69), is a considerably more difficult item in terms of social liberalism than item 53, which is concerned with the free choice between military and civilian service (mean = 1.53). In other words, a considerably higher level of social liberalism is needed to agree on EU membership compared to the free choice between military and civilian service.[16] Factor analysis, however, requires that the items have the same frequency distribution (van Schuur 2003).

In order to select items into unidimensional scales, we thus complement our analysis with a technique out of the repertoire of item response theory (IRT): Mokken scale analysis (Mokken 1971). The Mokken model is a probabilistic expansion and improvement upon the deterministic Guttman scale. While originally developed for dichotomous items, the procedure has been extended to ordered polytomous items (Molenaar 1991). Compared to other forms of IRT, such as the more commonly known Rasch model (Rasch 1960), the Mokken model has the significant advantage of imposing less rigorous assumptions on the relation between single items and the latent trait. In particular, the only assumption in this

16 This implies a) that a moderately socially liberal person, while relatively likely to favor the free choice between military and civilian service, is considerably less likely to agree on EU membership (60), b) that the reverse is rather unlikely, and c) that at the same time, a person with strong social liberal attitudes tends to agree on both.

regard is that there is a monotone relationship (Gerich 2001).[17] The Mokken scaling procedure can basically be described as a stepwise bottom-up search procedure for indicators of the same latent trait, whereby the selection of items into unidimensional scales relies on Loevinger's H coefficient of homogeneity (van Schuur 2003). The first step consists of a search for the best smallest scale, meaning that out of a set of items, those two with the highest degree of homogeneity in terms of Loevinger's H are selected. To be considered a Mokken scale, the coefficient has to exceed a pre-defined threshold value c of at least .3. In the second step, the next best fitting item will be selected into the scale. Again, the item-specific H has to exceed at least .3. The second step is then iterated until no new item can be selected that satisfies the pre-specified lower boundary. According to a rule of thumb, the resulting scales are considered weak if $H \geq .3$, of average strength if $H \geq .4$, and strong if $H \geq .5$.

Since the Mokken procedure requires that all components of a latent trait point in the same direction, we included all items both in original and reversed order. However, we excluded all ambiguous items, i.e., items that are attributable to more than one latent trait.[18] The reason for this lies in the nature of the Mokken scaling procedure, which will, if the chosen threshold value is met, attribute ambiguous items to whatever scale is constructed first – and thus naturally neglect that they could also be part of another, later formed scale. Leaving out the ambiguous items should accordingly minimize threats to internal consistency.

The results of the Mokken scale analysis can be gleaned from table 2. The slightly reduced number of items results in a modest increase of complete entries (N = 8,188). The scaling procedure yields eight scales when we set the lower boundary at .3. Contrary to the findings from the factor analysis, this suggests that there are more than two latent dimensions. However, while the two longest scales, the first and the third, can be seen as reduced, but still

17 While the Mokken model is often used in psychological studies, applications in political science are comparatively rare. Examples include Cingranelli and Richards (1999), and Jacoby (1994, 1995). Compare Gemenis (2012) or Wheatley et al. (2012) for recent examples in the context of VAAs.

18 We considered an item ambiguous if it was clearly related to both latent traits in the factor analysis (7, 8, 31, 35, 41, 43, 44, 45, and 47). In addition, we excluded item 6 and 15 because additional analyses (results of which can be obtained upon request) suggested that they are attributable to both final scales.

representative versions of the previously extracted factors, the remaining – smaller – dimensions all include items on some aspect of the cultural and the economic cleavage, respectively. Notably, these particular aspects are all – albeit in different form – already included in the bigger first and third scales. For instance, the second scale includes items on cultural liberalism (e.g., abortion or gay adoption), an aspect of the cultural divide that is also part of the longer first scale (item 19 referring to the ban of minarets). On the other hand, the fourth scale deals exclusively with attitudes on state interventions into the economy, while some of the items on state interventionism were at the same time attributed to the more inclusive third scale (e.g., introduction of minimum wage).[19] The additional dimensions are hence somewhat hard to interpret and seem to add nothing substantially new. What is more, all except one of the additional dimensions diminish if we increase the lower boundary to .4.[20] We believe that the additional scales should thus be discarded.

(Table 2 about here)

For further analysis, we will rely only on the largest scales based on the higher threshold value (scales 1 and 3). This way, we get rid of the borderline items which just marginally meet the lower threshold. Both scales can be considered reliable in terms of split-half reliability – the Cronbach's alpha for the economic dimension is .77, while the alpha for the cultural dimension is .88. Substantially, the two resulting dimensions – despite of their reduced size – correspond to the two factors we extracted out of factor analysis. As before, they closely resemble the usual conception of political dimensionality (cf. Marks et al. 2006; Kriesi et al. 2006) in particular of Switzerland (cf. Lachat 2008; Leimgruber et al. 2010). The economic left-right dimension, on the one hand, includes items on the welfare state (2), on state interventions into the economy (23, 33, and 38), and on taxation (27). On the other hand, the social liberalism-conservatism dimension contains items on immigration (13, 14, 16, and 17), national sovereignty and foreign policy (60, 61, 62), on law and order (51, and 58), on

19 Moreover, the fifth represents a mix out of governmental authority and environmental protection, the seventh refers to institutional reform, and the eight to environmental protection, broadly conceived. The sixth scale deals with the relationship of the national to the international economy.

20 However, item 55 and 57, previously part of the first scale, now form their own scale. Again, we cannot see anything substantial added by this additional two-item scale.

the army (53), and on cultural liberalism (19). It is noticeable that in terms of the number of items included, questions of immigration policy and political openness dominate the cultural axis. However, this should hardly surprise observers of Swiss politics.

The two final scales were constructed by adding up the product of the item values and their item-specific weight. The weights represent the regression scores that were obtained through two separate polychoric factor analyses (cf. table 3). The social liberalism-conservatism axis was reversed to facilitate the interpretation of the maps. Both scales were rescaled so that they range from 0 to 1.

(Table 3 about here)

Mapping the "Party-in-the-electorate"

We can now use the two unidimensional scales to map the positioning of party supporters within the ideological space by calculating their positions with respect to the two scales. Party supporters are identified as those who declared an intention to vote for—or have already voted for—these parties in the opt-in survey.[21] We focus on the five biggest parties in Switzerland: the People's Democratic Party (SVP), the Social Democrats (SP), the Liberals (FDP), the Christian Democrats (CVP), and the Greens (GPS). Figure 4 shows the party-specific means of party supporters along with the standard deviation on the two respective dimensions. We begin our discussion with the average positions of party supporters. In the upper-left corner, we find the supporters of SP and GPS. Their positions hardly differ. On the economic side, supporters of both parties have a distinctly left-leaning attitude. In particular, they tend to agree on an expansion of the welfare state and at the same time take a strong stance against economic liberalism by favoring, for instance, the introduction of a general minimum wage. On the cultural side, SP and GPS supporters can be described as socially liberal. Generally, they favor increased efforts at integration of immigrants as well as political openness and policies directed at cultural liberalism. At the other extreme end of the political

21 As there was both a pre- and a post-election survey, a user is considered a party supporter if she or he indicated their intention to vote for one of these five parties in 2007 or if she or he indicated to have actually voted for one of them. Note that some users took part in both surveys. We left out those who made contradictory indications. For all five parties, the number of supporters we could consider is > 1,000.

space, we find the SVP supporters in the lower-right corner. SVP supporters tend to combine an economically rightist view with a strong social conservatism. There is, for example, near consensus among SVP supporters on refusal of EU membership and broad agreement on a tough stance against both immigrants and criminals. FDP supporters roughly share the rightist position of the SVP supporters in economic terms, but have a slightly more pronounced economically liberal view. On the cultural dimension, FDP supporters take a centrist stance and are in this respect close to the CVP supporters. CVP supporters, however, take a middle position not only on the cultural dimension, but on the economic dimension as well. Overall, the demand side of the Swiss political space seems determined by three different poles, a left-liberal pole composed of SP and GPS, a right-liberal pole consisting of the FDP, and a right-conservative pole comprised of the SVP. CVP supporters lie in the middle.

(Figure 4 about here)

Let us now turn to the issue of intra-party ideological cohesion. We investigate intra-party ideological coherence by comparing the standard deviations of each group of policy supporters with respect to the two respective dimensions, represented by an ellipse around the average party supporter position (see Figure 4). A close look at the figures suggests, first, that the ideological consensus seems highest among the supporters of the left-liberal parties. Conversely, CVP and FDP supporters are quite divided in ideological terms. Together, supporters of these parties seem to cover a substantial part of the ideological ground in-between the left-liberal and the right-conservative poles. Meanwhile, the ellipses show a considerable overlap, indicating that the ideological standing of a left-wing FDP and a right-wing CVP supporter largely coincides. The most interesting pattern, however, can be found for the SVP. Supporters of the right-conservative party seem to have a high degree of convergence on cultural aspects only, while they are highly divided on the economic dimension. In fact, the standard deviation of SVP supporters is the lowest of all five on the y-axis, but the highest on the x-axis. This leads to the conclusion that there are two types of SVP supporters. On the one hand, there are those with preferences according to Kitschelt's "winning formula" (Kitschelt and McGann 1995), i.e., supporters combining strong

preferences for demarcation and neoliberal economic policies. On the other hand, there are those who, while sharing the distinct socially conservative view, prefer more moderate economic policies. Most interestingly, a closer inspection of the data reveals that an SVP supporter's position on the economic axis is correlated with income and education: the higher education and income, the clearer pro-market are the views of an SVP supporter.

What about External Validity? Comparing the VAA-based Map to a Survey-based Map

As has already been outlined, the most fundamental problem in using VAA data to draw maps of the demand side political dimensionality is the lack of representativity. In this section, we address the question of whether and, if so, how the representativity problem affects the placement of the party-in-the-electorate in the political map. We do this by comparing our VAA-based map with one based on data from a representative telephone survey, namely the Swiss Electoral Studies (Selects) 2007. The Selects survey is particularly suited as it a) includes a series of 11 items on policy statements that are, if much less specific, essentially similar to the smartvote items; and b) was conducted over a roughly similar time frame. As in the VAA-based analysis, factor analysis and Mokken scaling of the 11 policy items led to the identification of an economic and a cultural dimension.[22]

Figure 5 plots the average positions of respondents (corrected for cantonal oversampling) who feel close to one of the five major Swiss parties along with the respective standard deviations on the two dimensions. We can clearly see that the basic pattern is analogous to the VAA-based map. Here too, the supporters of the Social Democrats, the FDP and the People's Party form an ideological triangle with the CVP located right in the middle. At the same time, however, the supporters of the five major parties seem less distant from

22 The method of scale construction corresponds to the one described above. We excluded respondents who indicated that they did not cast their vote in the federal election to get a sample of actual voters. As mentioned earlier (see footnote 5), a much higher number of respondents claimed to have voted than one would have expected when looking at the effective turnout rate. The data was weighted to correct for cantonal oversampling. The cultural dimension consists of five items on EU membership, immigration, the army, traditionalism, and law and order (H = .38). The economic dimension contains two items, one on social expenses and the other on taxation of high incomes (H = .34). Meanwhile, Mokken scaling yielded a third dimension on environmental protection, which we do not consider for our comparison with the VAA-based map. Factor as well as Mokken scale analysis results can be obtained upon request.

each other. This could indicate some problems with representativity: it is widely acknowledged that voter ideological consistency depends on a voter's level of political sophistication, insofar as higher sophistication generally leads to more consistent, and thus also more polarized, views of party supporters (Converse 1964; Converse and Pierce 1986; Jennings 1992). The more distant average supporter positions in the VAA map could accordingly be the result of the self-selection mechanism, which leads to overrepresentation of sophisticated voters in the VAA sample. But, importantly, there are other factors that could be responsible for the comparatively lower spread in the survey-based map. On the one hand, the survey questions include a middle category, whereas the VAA map does not. The availability of a middle category could have tempted a number of respondents to choose the in-between answer instead of taking a clearer stance by opting for a tend to agree or disagree – which obviously will result in seemingly less distant positions. On the other hand, the different format may also have contributed to a different spread. Respondents have more time to think about their responses in case of the VAA, which may induce more consistency; and the absence of an interviewer in case of VAAs may facilitate the expression of "difficult" positions, i.e., distinctively non-centrist positions. Overall, we should thus not be worried too much about the more distant placements.

However, another small difference concerns the position of the Green party supporters, which in contrast to the VAA-based map suggests that they are slightly more socially liberal than the SP supporters. However, their positioning still remains very close. Probably the most significant difference concerns the placement of the FDP and the CVP on the y-dimension. While CVP supporters remain slightly more liberal than FDP supporters, both are now relatively closer to the conservative SVP. Given that both of these parties are disproportionately supported by elderly people and pensioners in particular, we cannot rule out the possibility of a sampling bias in the VAA data. Nevertheless, the difference is hardly fundamental.

Turning to the question of ideological cohesion, we obtain similar results to the findings from the VAA-based map – despite the fact that the differences are less pronounced,

which could well be due to the significantly lower number of items. First, the supporters of the two left-liberal parties remain the most coherent, particularly on the economic dimension. Second, the SVP supporters remain close on the cultural dimension only. Moreover, as in the VAA-based map, the standard deviation on the y-axis is the smallest of all five. And lastly, FDP and CVP supporters remain the most divided overall. With some smaller caveats in mind, we thus think the VAA-based map passed the test of external validity.

Comparing Party Supporters and Candidates

Now that we have established the basic validity of the VAA-based political map, we proceed to more fully exploit the potential of VAA data and investigate additional aspects. In this section, we consider the relationship between rank-and-file supporters and the political elite, link our findings to the broader literature, as well as compare them with previous empirical inquiries. For our comparison of party supporters and candidates, we exploit the fact that most candidates filled in the same questionnaire, i.e., we use the same items to place candidates within the demand side political map. It is important to note that we thus impose the latent political dimensions underlying the demand side of electoral competition on the supply side. Meanwhile, we are aware that that the dimensionality of the two sides need not be the same (cf. Lachat 2008). But the present endeavor of comparing the placements of the elite to those of party supporters necessarily requires a common scale. In full knowledge that a complete understanding involves considering both sides of the coin, for now, we will use the dimensions inferred from the demand side preferences.

Figure 6 presents the mean positions of both supporters and all candidates of the five major Swiss parties, as well as the respective standard deviations on the two dimensions. The first thing we note is the generally smaller size of the ellipses around the candidate positions, which suggests – rather unsurprisingly – that politicians tend to be ideologically more coherent. There are two minor exceptions, namely the CVP on the x- and the FDP on the y-dimension, but given the roughly equal size of the candidate and user standard deviations, this does not change the overall picture. Meanwhile, the tendencies in terms of intra-party ideological consensus remain the same also for the supply side.

A more interesting question seems to be whether it is the elite or their followers who are more polarized. Again, we can glean the answer from Figure 6: candidates seem consistently more polarized, particularly on the economic axis. While the candidates of the left-liberal Social Democrats and Greens are stronger left-leaning than their constituencies (and also more socially liberal), the candidates of the CVP, FDP, and SVP have stronger pro-market attitudes (and roughly similar cultural attitudes).

Yet, the ideological distances between the elite and rank-and-file supporters seem to vary considerably by party. Table 4, showing the Euclidian distances between the stances of supporters and candidates, confirms this impression. The ideological gap is most pronounced in case of the left-liberal SP and the right-conservative SVP. Yet, it is notable that the very considerable ideological distance between SVP candidates and supporters is due mainly to the economic dimension. We have already established the existence of two distinct types of SVP supporters, with the adherents of Kitschelt's winning formula on one side and those combining strong conservative attitudes with a more moderate stance on economic issues on the other. The position of the SVP candidates close to the bottom-right corner of the map suggests that the party elite is predominantly of the former type, i.e., has a rather extreme pro-market ideology, and accordingly misrepresents a significant part of its constituency.

(Figure 6 about here)

Meanwhile, the gap between supporters and the elite is smaller for the Liberals, the Christian Democrats, as well as the Greens. In case of the former two, the smaller ideological distances may be explainable by the relatively centrist elite positioning on the cultural (both FDP and CVP) and the economic axis (CVP only). Since many voters tend to be located around the center, the moderate positions are likely to lead to a high degree of elite-supporter ideological congruency (Leimgruber et al. 2010). The closeness of the Green elite and its followers, on the other hand, may be due to the party's status as a niche party.[23] It is held that niche parties, unlike their mainstream counterparts, do not try to seek short-term vote maximization, but aim to preserve their existing constituency in the longer term. Niche parties

23 A niche party is defined as a party belonging to the Communist, the Nationalist or the Green party families.

tend thus to be more responsive to their voters, as it can be expected that they try to appeal to their electorate on policy grounds in order to maintain long-term loyalty (Ezrow, De Vries, Steenbergen, and Edwards 2011). Moreover, the non-hierarchical structure of niche party organizations favors communication between the elites and party members (Kitschelt 1988), which renders the elite more responsive to member policy preferences. In sum, while the differences in intra-party congruency we find are considerable, they seem explainable in terms of existing theoretical accounts. Maybe even more importantly, while the exact numbers differ, Leimgruber et al. (2010) found an essentially similar pattern using survey data, with the SP and SVP most distant from their voters, the Greens and the FDP significantly closer, and the CVP the closest.

Despite these inter-party differences, however, candidates of all parties remain quite distant from their constituencies, and party supporters are much closer together than the politicians. This finding is in line with the seminal work of Converse (1964), as well as with newer work in the US and the French context, respectively (Converse and Pierce 1986; Jennings 1992). In addition, it mirrors recent empirical work on the elite-mass ideological relationship in Switzerland (Lutz 2008; Leimgruber et al. 2010; for a contradicting finding cf. Lachat 2008). However, the higher level of polarization on the elite level is at odds with the traditional median voter theorem, which would lead us to expect that parties place themselves near the center of the political spectrum (Downs 1957), as well as with refined proximity models which predict that candidates in a multiparty system – aiming at vote maximization – place themselves near the center of attitudes of their electorate (Dalton 1985). Instead, the stronger elite polarization can be interpreted as support for a directional model of voting, which suggests that voters support a party that takes a more intense position on the side of an issue is more likely to be favored by the voter (Rabinowitz and Macdonald 1989; Iversen 1994). As argued by Kedar (2005), choosing a party with more extreme values does make sense particularly in a consensual system like Switzerland where voters can expect that a party's more extreme values will be watered down along the path.

The notion of a directional model of voting is even strengthened when we look at individual candidates. In particular, the Euclidian distance between supporters and successful candidates for the National Council is consistently higher than the one between supporters and unsuccessful candidates (cf. table 4).[24] This seems to confirm the rank-and-file preference for more extreme representatives. However, there are at least two other, though not necessarily rival, explanations for what we find: political sophistication and a socialization process. In order to understand either, we have to acknowledge that the bulk of the candidates on party lists are best described as space fillers without any reasonable chance to get elected. For instance, the CVP in Zurich – a mainly protestant canton where the originally catholic party is traditionally weak – presented their voters with a full list of 34 candidates as well as an additional second list with 23 candidates from the young CVP, even though the CVP gained only two seats in the previous election in 2003. It is thus obvious that the overwhelming majority of candidates did not stand the slightest chance of being elected – not least in light of the fact that both incumbents aimed at re-election. Most of these space fillers do not even actively campaign; their only function is to fill up the list. Space fillers are accordingly not (yet) part of the political elite, narrowly defined, but can rather be described as active party members that may at some point in the future may get the chance to run from a better list place. Thus, the continuum of ideological polarization could stem from the differing levels of political sophistication of normal party supporters, which arguably increases along the path from active party members to elected MPs. In fact, Leimgruber et al. (2010: 518) present some evidence in support of the sophistication thesis: according to their findings, the closest ideological relationship can be found between sophisticated voters and unsuccessful candidates. However, unfortunately, our dataset does not contain data on political sophistication to reassess this claim.

The third explanation of the remote positions of successful candidates is closely related to the sophistication thesis, but refers to a socialization process, wherein potential future MPs learn in the course of climbing up the ladder of party hierarchy that, in order to be

24 The elections to the National Council follow the proportional principle, whereas the elections to the State Council follow the majoritarian principle. By focusing on the bigger chamber, we aim to avert possible effects of the electoral system.

successful, they need to have an ideologically more pronounced position than the typical grassroots party member. Such a socialization process makes sense in the Swiss open list PR system in particular. It is widely acknowledged that open list systems make personal reputation for parliamentary candidates extremely valuable and thus create incentives to differentiate from the rest of the candidate field, for example, in ideological terms (Sartori 1976; Carey and Shugart 1995).

Lastly, both the socialization and the sophistication hypotheses gain some leverage by the fact that incumbents running for re-election in the lower chamber consistently have the most distant position to the average party supporter, notably more distant than the newly elected, whereby the newly elected are again more distant compared to the unsuccessful candidates (see Table 4). Put differently, the data seems to suggest an ideological continuum with party supporters at the least polarized end and those arguably most politically sophisticated and in the final stage of socialization, i.e., incumbent candidates, at the other extreme end. Meanwhile, we have to note that our cross-sectional snapshot does not, of course, allow us to put any of these potential causes of the remote position of successful candidates (directional voting, political sophistication, and a socialization process) to an effective test. Thus, we cannot rule out the possibility that the differences are simply due, for example, to a lower degree of ideological thinking among the general populace (Jennings 1992). Moreover, the tentative conclusions we have reached may also be due to ecological fallacy, i.e., could be the result from the usage of aggregate national data to infer individual-level relationships.

Ideological Differences at the Sub-national Level

In the final section we will use the VAA data to address an ongoing debate on whether there is something like a national party in Switzerland at all. Ladner (2001) holds that the highly decentralized, federal structure has effectively hampered the rise of national parties. According to Ladner, there is thus nothing like a Swiss party system; instead, he claims, there effectively are 26 different party systems, i.e., one per canton. Implicit in this claim is the assumption that the ideological divergence between the sub-national parties (which form the

national parties) is sufficiently large as to render any attempt at national aggregation useless and potentially misleading. However, using as evidence roll-call votes and voting recommendation in referendum campaigns, Hug (1994) and Hug and Schulz (2007) demonstrate empirical evidence that disputes the view that regional differences render analyses at the national level impossible.

We investigate cross-cantonal ideological variation on both the demand and the supply side of electoral competition. However, due to the limited number of observations in many small cantons, we restrict our analysis to five cantons: Zurich, Bern, Lucerne, Vaud, and St. Gallen. Our case selection aims to cover differences in geography, language, and religion.[25] Figures 7 and 8 plot the cantonal-specific average positions of party candidates and supporters[26], respectively. We can indeed see some regional differences, and some of them seem systematic across the national party families. For instance, the cantonal parties from the catholic Lucerne and, though less consistently, St. Gallen tend generally to be at the right-conservative end of the respective party spectrums. However, the most significant difference certainly concerns the Vaud. Both supporters and elites from the French-speaking canton tend to be located at the left-liberal wings of all major parties. In fact, the only exception is the Vaudois SVP supporters. The "Röstigraben" – the term is commonly used in Switzerland to refer to the more left-leaning voting behavior of the French-speaking part in certain referendum votes, especially votes on social policy – is thus reflected in the relative intra-party ideological stances. Figure 8, where we plot the aggregate average positions of both users and candidates from the German- and the French-speaking cantons (multilingual cantons excluded), respectively, confirms this impression.

Yet, are the differences so fundamental that they preclude national aggregation? This certainly does not seem to be the case for the demand side where the mean points of each party "cluster" (see Figure 8) do not overlap with the "clusters" of other parties—except in

25 The Vaud is a French-speaking, protestant canton with a significant catholic minority located in the West; Bern is a predominantly protestant, multilingual, though mainly German-speaking, centrist canton; Zurich is mainly protestant, centrally-located and German-speaking; Lucerne is a traditionally catholic, German-speaking centrist canton; and St. Gallen is a German-speaking, religiously divided canton with a catholic majority in East Switzerland.

26 We again focused on candidates for the National Council.

the case of the two left-wing parties, which are always seen to overlap. However, the supporter data suffers from a lack of representativeness; we may thus have more trust in the candidates data. The supply side shows a considerably higher degree of regional variation among cantonal parties, in particular for the CVP. Indeed, the cantonal CVP of both Lucerne and St. Gallen seem closer to the FDP than to the other cantonal CVP parties (see Figure 7). But still, apart from these two cases, based on the 2007 data set at hand cantonal parties all in all are closest to their own party families. Overall, we thus believe that regional differences do not necessarily render national aggregation flawed. Whether the relatively small cantonal differences are the result of a gradually centralizing Swiss party system in general is beyond the scope of this exercise and cannot, in the end, be investigated with VAA data alone.

Conclusion

For the purpose of mapping ideological space in an electoral context, VAA data has the potential to overcome certainly not all but some of the major pitfalls of other methods such as expert coding or content analysis of party manifestos. While standard survey data can help to compensate for some of the problems involved, these surveys are, however, relatively costly, and therefore have to operate with sample sizes not large enough allowing for a more thorough analysis of population sub-groups or regional splits.

Like in many other established Western democracies the classical cleavages in Switzerland can nowadays be reduced to one left-right and one cultural liberalism versus conservatism axis, which emerge as two latent variables each composed of a set of policy statements included in the VAA. Our assessment of scalability for the two pre-defined ideological axes of the Swiss political space revealed problems regarding internal consistency. This we attempted to overcome by applying inductive approaches, namely, exploratory factor analysis based on polychoric correlations and Mokken scale analysis. In a first step the two-dimensional solution was confirmed; however, it portrayed some peculiarities for environmental items, and also led us to exclude several ambiguous items from further analysis.

With the help of the two re-established uni-dimensional scales we were able to map the party supporters of the five biggest Swiss political parties during the 2007 Swiss elections. Findings from the VAA generated data sets are largely coherent when compared to survey data from SELECTS 2007. With a solidified mapping of party supporters as a baseline we were, in a next step, able to contrast their positions to those of the lower house candidates who had filled in the VAA questionnaire. Candidates are ideologically more coherent and seemed to take more pronounced positions than their supporters, especially on the left-right axis. The gap between the elite (candidates) and their constituents (VAA users) is largest for the parties at the poles of the political spectrum, the Social Democrats (SP) and the People's Democratic Party (SVP).

References

Ayberk, Ural, Matthias Finger, Carlos Garcia, and Pascal Sciarini (1991). *Les partis politiques à cœur ouvert.* Lausanne: Loisirs et Pédagogie.

Bartolini, Stefano, and Peter Mair (1990). *Identity, Competition, and Electoral Availability: The Stabilisation of European Electorates 1885-1985.* Cambridge: Cambridge University Press.

Benoit, Kenneth, and Michael Laver (2006). *Party Policy in Modern Democracies*. London: Routledge.

Benoit, Kenneth, and Michael Laver (2012). "The Dimensionality of Political Space: Epistemological and Methodological Considerations." *European Union Politics* 13 (2): 194-218.

Brändle, Michael (1999). "Konkordanz gleich Konvergenz? Die Links-Rechts-Positionierung der Schweizer Bundesratsparteien". *Swiss Political Science Review* 5 (1): 11-29.

Budge, Ian, David Robertson, and Derek Hearl (eds.) (1987). *Ideology, Strategy and Party Change.* Cambridge: Cambridge University Press.

Budge, Ian, Hans-Dieter Klingemann, Andrea Volkens, and Judi Bara (eds.) (2001). *Mapping Policy Preferences: Estimates for Parties, Electors, and Governments, 1945-1998.* Oxford: Oxford University Press.

Carey, John M., and Matthew S. Shugart (1995). "Incentives to Cultivate a Personal Vote: A Rank Ordering of Electoral Formulas." *Electoral Studies* 14 (4): 417-439.

Castles, Francis G., and Peter Mair (1984). "Left-Right Political Scales: Some "Expert" Judgments". *European Journal of Political Research* 12 (1): 73-88.

Cingranelli, David L., and David L. Richards (1999). "Measuring the Level, Pattern, and Sequence of Government Respect for Physical Integrity Rights." *International Studies Quarterly* 43 (2): 407-417.

Converse, Philip E., and Roy Pierce (1986). *Political Representation in France.* Cambridge, MA: Harvard University Press.

Converse, Philipp E. (1964). "The Nature of Belief Systems in Mass Publics." In David E. Apter, *Ideology and Discontent*, 206-261. London: Free Press of Glencoe.

Costello, Anna B., and Jason W. Osborne (2005). "Best Practices in Exploratory Factor Analysis: Four Recommendations for Getting the Most From Your Analysis." *Practical Assessment, Research & Evaluation* 10 (7). <http://pareonline.net/getvn.asp?v=10&n=7> (2012, August 31).

Cronbach, Lee (1951). "Coefficient Alpha and the Internal Structure of Tests". *Psychometrika* 16 (3): 297-334.

Dalton, Russell (1985). "Political Parties and Political Representation: Party Supporters and Party Elites in Nine Nations" *Comparative Political Studies* 18 (3): 267-299.

Dinas, Elias, and Kostas Gemenis (2010). "Measuring Parties' Ideological Positions with Manifesto Data: A Critical Evaluation of the Competing Methods." *Party Politics* 16 (4): 427-450.

Downs, Anthony (1957). *An Economic Theory of Democracy.* New York, NY: Harper and Row.

Ezrow, Lawrence, Catherine De Vries, Marco Steenbergen, and Erica Edwards (2011). “Mean Voter Representation and Partisan Constituency Representation: Do Parties Respond to the Mean Voter Position or to Their Supporters?” *Party Politics* 17 (3): 275-301.

Fivaz, Jan, and Giorgio Nadig (2010). “Impact of Voting Advice Applications (VAAs) on Voter Turnout and Their Potential Use for Civic Education.” *Policy & Internet* 2 (4): 167-200.

Fivaz, Jan, and Giorgio Nadig. 2010. “Impact of Voting Advice Applications (VAAs) on Voter Turnout and Their Potential Use for Civic Education”. *Policy & Internet* 2 (4): 167-200.

Garzia, Diego (2010). The Effects of VAAs on Users’ Voting Behaviour: An Overview. In Lorella Cedroni, and Diego Garzia (eds.), *Voting Advice Applications in Europe: The State of the Art*, 13-47. Naples: ScriptaWeb.

Gemenis, Kostas (2012). “Estimating Parties’ Policy Positions through Voting Advice Applications: Some Methodological Considerations. *Acta Politica*, forthcoming.

Gerich, Joachim (2001). *Nichtparametrische Skalierung nach Mokken. Beiträge zur qualitativen Analyse quantitativer Daten*. Linz: Trauner Verlag.

Hansen, John M (1998). “Individuals, Institutions, and Public Preferences over Public Finance.” *American Political Science Review* 92 (3): 513-531.

Hermann, Michael, and Heinrich Leuthold (2003). *Atlas der politischen Landschaften. Ein weltanschauliches Porträt der Schweiz.* Zürich: vdf Hochschulverlag.

Hermann, Michael, Heiri Leuthold, and Hanspeter Kriesi (1999). “Die politische Landkarte der Schweiz.” *Das Magazin* 40 (1999, October 9).

Hix, Simon, and Christophe Crombez (2005). “Extracting Ideal Point Estimates from Actors’ Preferences in the EU Constitutional Negotiations.” *European Union Politics* 6 (3): 353-376.

Huber, John, and Ronald Inglehart (1995). “Expert Interpretations of Party Space and Party Locations in 42 Societies”. *Party Politics* 1 (1): 73-111.

Hug, Simon (1994). “La cohésion des partis fédéraux dans la phase référendaire.” In Yannis Pappadopoulos (ed.), *Elites politiques et peuple. Analyse des votations fédérales 1970-1987*, 85-112. Lausanne : Réalités sociales.

Hug, Simon, and Tobias Schulz (2007). “Left-Right Positions of Political Parties in Switzerland.” *Party Politics* 13 (3): 305-330.

Inglehart, Ronald (1977). *The Silent Revolution: Changing Values and Political Style among Western Publics.* Princeton, NJ: Princeton University Press.

Iversen, Torben (1994). “Political Leadership and Representation in West European Democracies: A Test of Three Models of Voting.” *American Journal of Political Science* 38 (1): 45-74.

Jacoby, William G. (1991). *Data Theory and Dimensional Analysis.* Quantitative Applications in the Social Science Series, No. 78. Thousand Oaks, CA: Sage.

Jacoby, William G. (1994). “Public Attitudes toward Government Spending.” *American Journal of Political Science* 38 (2): 336-361.

Jacoby, William G. (1995). “The Structure of Ideological Thinking in the American Electorate.” *American Journal of Political Science* 39 (2): 314-335.

Jeitziner, Bruno, and Tobias Hohl (1997). “Measuring Political Preferences: Ratings for Members of the Swiss National Council.” *Swiss Political Science Review* 3 (1): 1-27.

Jennings, M. Kent (1992). “Ideological Thinking among Mass Publics and Political Elites.” *The Public Opinion Quarterly* 56 (4): 419-441.

Kedar, Orit (2005). “When Moderate Voters Prefer Extreme Parties: Policy Balancing in Parliamentary Elections.” *American Political Science Review* 99 (2): 185-199.

Kerr, Henry H. (1981). *Parlament et societé en Suisse.* Saint-Saphorin: Editions Georgi.

Key, V O. (1964). *Politics, Parties and Pressure Groups.* 5th edition. New York, NY: Crowell.

Kitschelt, Herbert (1988) “Organization and Strategy of Belgian and West German Ecology Parties: A New Dynamic of Party Politics in Western Europe?” *Comparative Politics* 20 (): 127–54.

Kitschelt, Herbert (1988). “Left-libertarian Parties.” *World Politics* 40 (2): 194-234.

Kitschelt, Herbert (1994). *The Transformation of European Social Democracy.* Cambridge: Cambridge University Press.

Kitschelt, Herbert, and Anthony J. McGann. *The Radical Right in Western Europe: A Comparative Analysis.* Ann Arbor, MI: The University of Michigan Press.

Kleinnijenhuis, Jan, and Andre Krouwl (2009). “Dimensionality of the European Issue Space.” *Working paper,* presented at the NCCR Bern Workshop Vote Advice Applications, Bern, 2009, November 12-13.

Kriesi, Hanspeter, Edgar Grande, Romain Lachat, Martin Dolezal, Simon Bornschier, and Timotheos Frey (2006). “Globalization and the Transformation of the National Political Space: Six European Countries Compared.” *European Journal of Political Research* 45 (6): 921-956.

Kriesi, Hanspter, and Alexander H. Trechsel (2008). *The Politics of Switzerland: Continuity and Change in a Consensus Democracy.* Cambridge: Cambridge University Press.

Lachat, Romain (2008). “Switzerland: Another Case of Transformation Driven by an Established Party.” In Kriesi, Hanspeter, Edgar Grande, Romain Lachat, Martin Dolezal, Simon Bornschier, and Timotheos Frey (eds), *West European Politics in the Age of Globalization*, 130-153. Cambridge: Cambridge University Press.

Ladner, Andreas (2001). “Swiss Political Parties: Between Persistence and Change.” *West European Politics* 24 (2): 123-144.

Ladner, Andreas, and Michael Brändle (2001). *Die Schweizer Parteien im Wandel. Von Mitgliederparteien zu professionalisierten Wählerorganisationen?* Zürich: Seismo.

Ladner, Andreas, Gabriela Felder, and Jan Fivaz (2010). “More than Toys? A First Assessment of Voting Advice Applications in Switzerland.” In Lorella Cedroni, and Diego Garzia (eds.), *Voting Advice Applications in Europe. The State of the Art*, 91-123. Napoli: CIVIS s.n.c/Scriptaweb.

Leimgruber, Philipp, Dominik Hangartner, and Lucas Leemann (2010). “Comparing Candidates and Citizens in the Ideological Space.“ S*wiss Political Science Review* 16 (3): 499-531.

Leuthold, Heinrich, Michael Hermann, and Sara Irina Fabrikant (2007). “Making the Political Landscape Visible: Mapping and Analyzing Voting Patterns in an Ideological Space“. *Environment and Planning B: Planning and Design* 34 (5): 785-807.

Lipset, Seymour M., and Stein Rokkan (eds.) (1967). *Party Systems and Voter Alignments: Cross-National Perspectives*. New York, NY: The Free Press.

Lobo, Marina C., Maarten Vink, and Marco Lisi (2011). “Mapping the Political Landscape: A Vote Advice Application in Portugal.” In Lorella Cedroni, and Diego Garzia (eds.), *Voting Advice Applications in Europe: The State of the Art*, 139-167. Naples: ScriptaWeb.

Louwerse, Tom, and Martin Rosema (2011). “The Design Effects of Voting Advice Applications: Comparing Methods of Calculating Results.” Unpublished paper, Leiden University.

Mair, Peter (2001). “Searching for the Positions of Political Actors: A Review of Approaches and a Critical Evaluation of Expert Surveys”. In Michael Laver (ed.), *Estimating the Policy Positions of Political Actors* , 10-30. London: Routledge.

Marks, Gary, Liesbet Hooghe, Moira Nelson, and Erica Edwards (2006). “Party Competition and European Integration in the East and West. Different Structure, Same Causality.” *Comparative Political Studies* 39 (2): 155-175.

Mokken, Robert J. (1971). *A Theory and Procedure of Scale Analysis Applications in Political Research.* New York, NY: De Gruyter.

Molenaar, Ivo W. (1991). “A Weighted Loevinger H-Coefficient Extending Mokken Scaling to Multicategory Items.” *Kwantitatieve Methoden* 12 (37): 97-117.

Pianzola, Joëlle, and Andreas Ladner (2011) Tackling Self-Selection into Treatment and Self-Selection into the Sample Biases in VAA Research. 6Th ECPR General Conference, University of Iceland, Reykjavik, August 25th -27th 2011. http://www.andreasladner.ch/Hauptframes/publikationen.html

Rabinowitz, George, and Stuart Elaine Macdonald (1989). “A Directional Theory of Issue Voting.” *American Political Science Review* 83 (1): 93-121.

Rasch, Georg (1960). *Probabilistic Models for Some Intelligence and Attainment Tests.* Copenhagen: Nielsen and Lydiche.

Sani, Giacomo, and Giovanni Sartori (1983). “Polarization, Fragmentation and Competition in Western Democracies. In Hans Daalder, and Peter Mair (eds.), *Western European Party Systems*, 307-340. London: Sage.

Sartori, Giovanni (1976). *Parties and Party Systems: A Framework for Analysis.* New York, NY: Cambridge University Press.

Schwarz, Daniel, Lisa Schädel, and Andreas Ladner (2011). “Pre-election Positions and Voting Behaviour in Parliament: Consistency among Swiss MPs.” *Swiss Political Science Review* 16 (3): 533-564.

Talonen, Jaakko, and Mika Sulkava (2011). “Analyzing Parliamentary Elections Based on Voting Advice Application Data.” In João Gama, Elizabeth Bradly, and Jaakko Hollmén (eds.), *Advances in Intelligent Data Analysis X. 10th International Symposium, IDA 2011, Porto, Portugal, October 2011. Proceedings*, 340-351. Heidelberg: Springer.

Thurman, James, and Urs Gasser (2009). “Three Case Studies from Switzerland: Smartvote”. *Internet & Democracy Case Study Series, March 2009. Berkman Center Research Publication No. 2009-03.3.* < http://cyber.law.harvard.edu/sites/cyber.law.harvard.edu/files/Thurman-Gasser_SwissCases_Smartvote.pdf> (2012, August 31).

Thurstone, Louis L. (1947). *Multiple Factor Analysis.* Chicago, IL: University of Chicago Press.

Trechsel, Alexander H., and Peter Mair (2011). „When Parties (Also) Position Themselves: An Introduction to the EU Profiler.” *Journal of Information Technology & Politics* 8 (1): 1-20.

Van Schuur, Wijbrandt H. (2003). “Mokken Scale Analysis: Between the Guttman Scale and Parametric Item Response Theory.” *Political Analysis* 11 (1): 139-163.

Velicer, Wayne F., and Douglas N. Jackson (1990). “Component Analysis Versus Common Factor-Analysis – Some Further Observations.” *Multivariate Behavioral Research* 25 (1): 97-114.

Walgrave, Stefaan, Michiel Nuytemans, and Koen Pepermans (2009). “Voting Aid Applications and the Effect of Statement Selection.” *West European Politics* 32 (6): 1161-1180.

Warwick, Paul V. (2005). „Do Policy Horizons Structure the Formation of Parliamentary Governments? The Evidence from an Expert Survey”. *American Journal of Political Science* 49 (2): 373-387.

Wheatley, Jonathan, Christopher Carman, Fernando Mendez, and James Mitchell (2012). “The Dimensionality of the Scottish Political Space: Results from an Experiment on the 2011 Holyrood Elections.” *Party politics*, forthcoming.

TABLES AND FIGURES

Table 1: Polychoric Factor Analysis of the 63 Smartvote Items

Item	*Question (shortened)*	*Factor 1*	*Factor 2*	*Uniqueness*
1	Raising the pension age	.008	**-.501**	.75
2	Income-based health insurance premiums	.313	**.574**	.572
3	Alternative medicine covered by basic health insurance	.26	**.404**	.77
4	Limitation of the free choice of doctor	.028	-.19	.96
5	Free choice of 2nd pillar pension fund	.126	-.178	.952
6	Federal subsidies for daycare centers	**.583**	.304	.568
7	Cut unemployment benefits	-.348	**-.427**	.697
8	Replacement of grants by repayable loans	-.26	-.305	.84
9	Special schools for troublesome children	**-.419**	-.133	.807
10	State subsidies for private schools	.06	-.061	.993
11	Ban on usage of genetically modified organisms	.122	**.583**	.646
12	English as the first foreign language in school	-.026	-.258	.933
13	Communal right to vote for foreigners	**.766**	.208	.37
14	Right for asylum seekers to file a judicial appeal	**.709**	.214	.452
15	Collective residence permit for sans-papiers	**.659**	.337	.452
16	Restricted use of the ballot box to decide on naturalization	**.739**	.107	.442
17	More federal funds for integration of foreigners	**.623**	.259	.545
18	Gay adoption	**.523**	.064	.723
19	Ban of minarets	**-.777**	.038	.394
20	Legalizing cannabis	**.548**	-.051	.697
21	Legalizing active euthanasia	.302	-.141	.889
22	Federal ban on smoking in public buildings	.072	.159	.97
23	Check of parity of pay between men and women	.363	**.582**	.529
24	Abolishment of fixed book prices	-.057	**-.537**	.709
25	Abortion	**.466**	-.210	.738
26	VAT reform	.054	-.397	.839
27	Tax equality between cantons and communes	.247	**.541**	.646
28	Ban of degressive tax rates	.366	**.485**	.631
29	Introducing individual taxation for married couples	.322	-.15	.874
30	Tax reform concerning commuters	.308	.112	.893
31	Reduction of federal taxation	-.359	-.401	.71
32	Replacement of federal taxes with higher VAT rates	-.064	-.302	.905
33	Introduction of minimum wage of 3,500 francs	.231	**.621**	.561
34	Total liberalization of shopping hours	.087	**-.606**	.625
35	Permission of parallel imports	.325	-.242	.836
36	Privatization of Swisscom	.051	**-.568**	.675
37	Maintaining a comprehensive network of post offices	.066	**.547**	.697
38	Mandatory funds for apprenticeship places	.266	**.569**	.605
39	Public contracts should favor Swiss companies	-.338	**.459**	.675
40	Introduction of road pricing	**.479**	.259	.703
41	Raising environmental standards for new buildings	.379	.391	.704
42	Relaxation of protection provisions for wolves	-.324	-.167	.867
43	Building new nuclear power stations	**-.431**	**-.562**	.498

44	Limitation of the associations right of appeal	**-.488**	**-.501**	.511
45	Reduction of greenhouse gas emissions	**.469**	**.461**	.568
46	Freezing of the construction zones	.155	**.468**	.757
47	Animal protection lawyer	.226	.305	.856
48	Financial referendum at federal level	-.216	-.060	.95
49	Direct election of the Federal Council	-.297	.061	.908
50	Right to vote from the age of 16	**.529**	.161	.695
51	Fighting youth crime by tightening juvenile law	**-.608**	-.191	.594
52	Supporting role for the army in internal security	-.289	-.136	.898
53	Free choice between military and civilian service	**.647**	.173	.551
54	Stricter monitoring of compliance with driving regulations	.201	.319	.858
55	Storage of military weapons in the armory	**.626**	.208	.564
56	Preventive monitoring of personal communication	-.351	-.122	.862
57	Abolishment of military courts	**.525**	.04	.723
58	Severer punishment for vandalism	**-.571**	-.147	.652
59	Foreign deployment of armed Swiss troops	.367	-.169	.837
60	Start of negotiations over EU membership	**.659**	.131	.548
61	Active and open foreign policy	**.719**	.066	.479
62	Extending free movement of peoples to Romania/Bulgaria	**.701**	-.076	.503
63	Facilitating agricultural imports from developing countries	**.507**	-.233	.689
% of variance explained		43.19	27.78	

Note: N = 7,887; the factor analysis is based on a polychoric correlation matrix; the loading matrix is varimax orthogonal rotated; loadings above .4 are in bold.

Table 2: Mokken Scale Analysis on 52 Smartvote Items

Item	*c > .3*								*c > .4*			
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*1*	*2*	*3*	*4*
1												
2			.4								.43	
3			.31									
4												
5												
9	.31											
10												
11								.31				
12												
13	.5								.53			
14	.46								.49			
16	.45								.49			
17	.41								.5			
18		.38								.4		
19	.46*								.45*			
20		.36										
21		.37								.41		
22												
23			.41								.45	
24				.32*								
25		.49								.52		
26												
27			.4								.43	
28			.32									
29												
30												
32												
33											.46	
34				.32*								
36				.35*								
37				.33								
38			.4								.45	
39						.34						
40					.36							
42												
46								.31				
48							.33					
49							.33					
50	.35											
51	.42*								.45*			
52												
53	.41								.41			

54					.36							
55	.39											.42
56												
57	.3											.42
58	.43*								.46*			
59												
60	.42								.46			
61	.44								.48			
62	.42								.47			
63						.34*						
Scale H	.41	.39	.38	.33	.36	.34	.33	.31	.47	.44	.??	.42

*Note: N = 8,188; * item is reversed; items 6, 7, 8, 15, 31, 35, 41, 43, 44, 45, and 47 are excluded as they fit multiple scales.*

Table 3: Weights

Left-Right		*Liberalism-Conservatism*	
Item	*Weight*	*Item*	*Weight*
2	.195	13	.17
23	.251	14	.148
27	.196	16	.117
33	.279	17	.09
38	.234	19*	.142
		51*	.109
		53	.073
		58*	.088
		60	.106
		61	.127
		62	.107

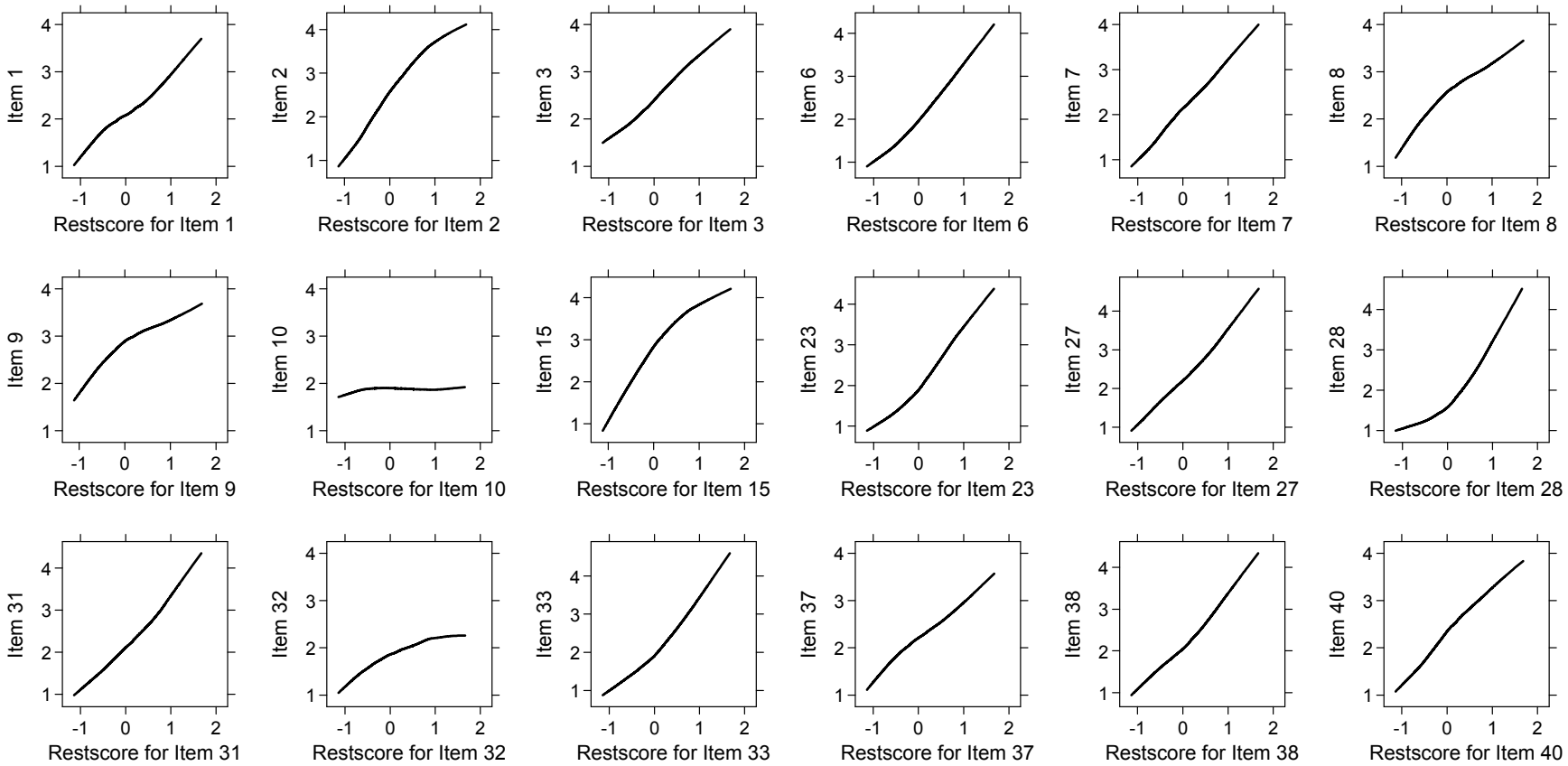
*Note: N = 12,622; * item is reversed; weights determined by polychoric factor analysis.*

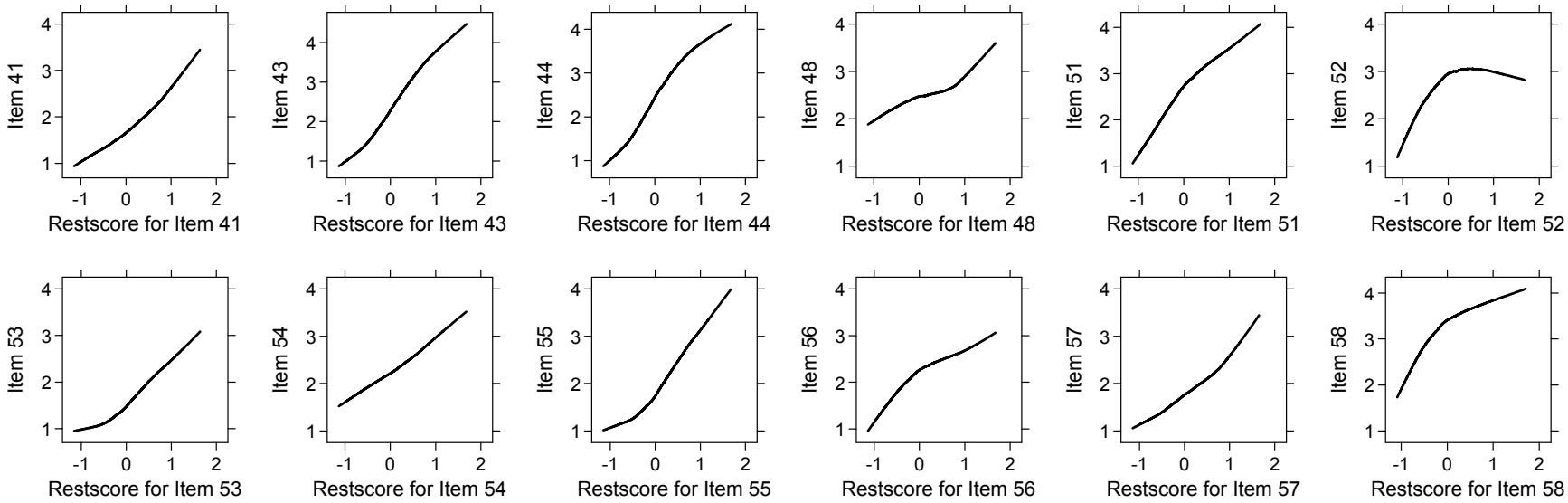
Table 4: Ideological Distances (Euclidian Distances)

Euclidian Distance	*CVP*	*FDP*	*SVP*	*SP*	*GPS*
Supporters – Candidates (All)	.13	.16	.28	.2	.16
Supporters – Elected Candidates (NC)	.23	.25	.36	.24	.21
Supporters – Not Elected Candidates (NC)	.11	.15	.26	.19	.16
Supporters – Incumbent Candidates (NC)	.28	.3	.38	.24	.24
Supporters – Newly Elected Candidates (NC)	.16	.15	.33	.22	.18

Note: NC denotes that candidates for the National Council were considered only. Candidates running for both chambers were also excluded.

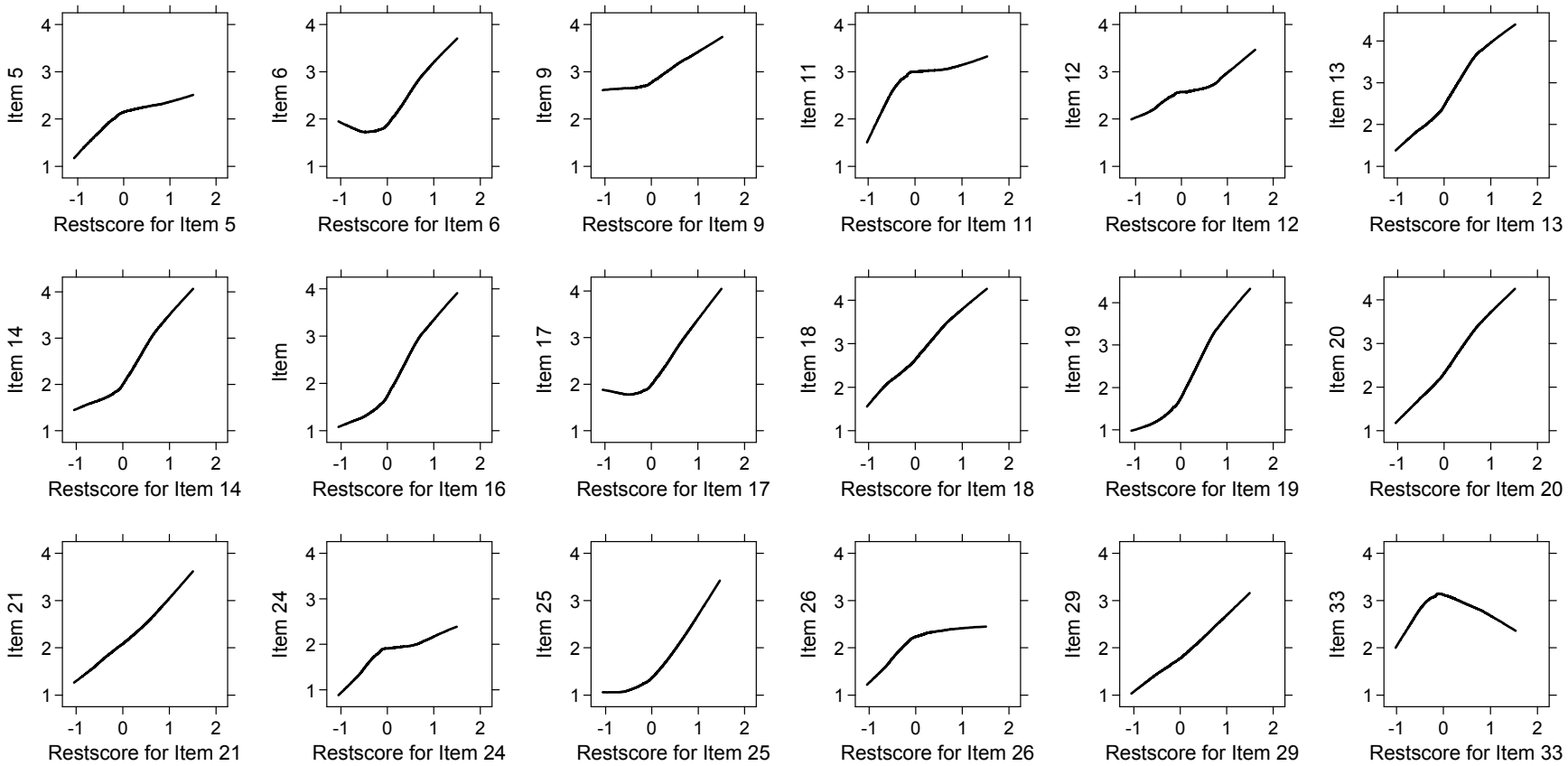
Figure 1: Internal Consistency of the Items on the Smartvote Left-right Scale (Restscore Method)

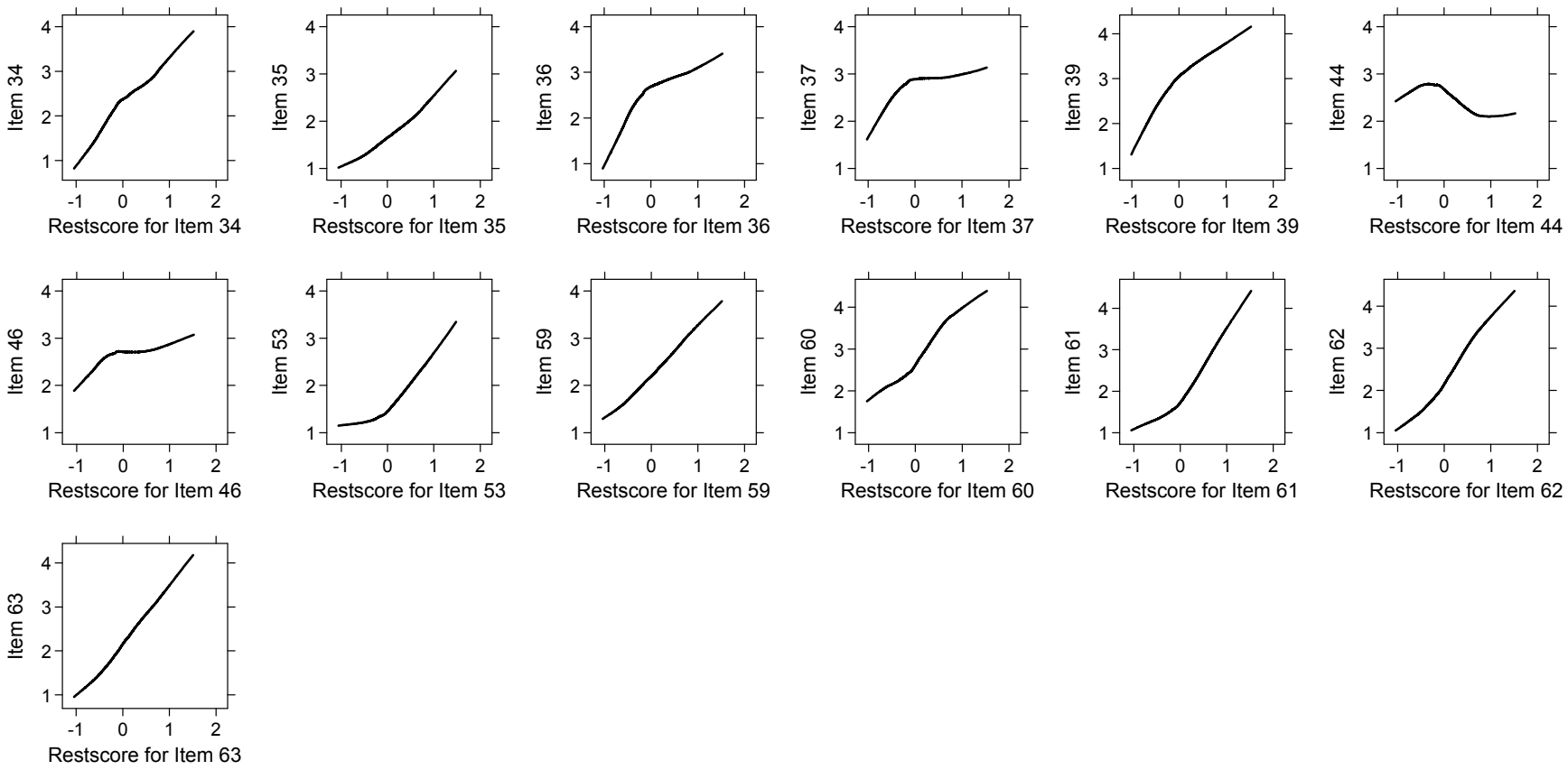




Note: N = 7,887; the x-axes represent the restscores of each item on smartvote's left-right scale, whereby high values indicate a right position. The y-axes represent the items. 1 denotes "yes", 2 "rather yes", 3 "rather no", and 4 "no" in case of items 2, 3, 6, 15, 23, 27, 28, 33, 37, 38, 40, 41, 53, 54, 55, and 57. The remaining items (1, 7, 8, 9, 10, 31, 32, 43, 44, 48, 51, 52, 56, and 58) are reversed so that 1 indicates "no", 2 "rather no", 3 "rather yes", and 4 "yes".

Figure 2: Internal Consistency of the Items on the Smartvote Liberal-conservative Scale (Restscore Method)





Note: N = 7,887; the x-axes represent the restscores of each item on smartvote's liberal-conservative scale, whereby high values indicate a conservative position. The y-axes represent the items. 1 denotes "yes", 2 "rather yes", 3 "rather no", and 4 "no" in case of items 5, 6, 12, 13, 14, 16, 17, 18, 20, 21, 24, 25, 26, 29, 34, 35, 36, 37, 44, 53, 59, 60, 61, 62, and 63. The remaining items (9, 11, 19, 33, 39, and 46) are reversed so that 1 indicates "no", 2 "rather no", 3 "rather yes", and 4 "yes".

Figure 3: Screeplot of Eigenvalues

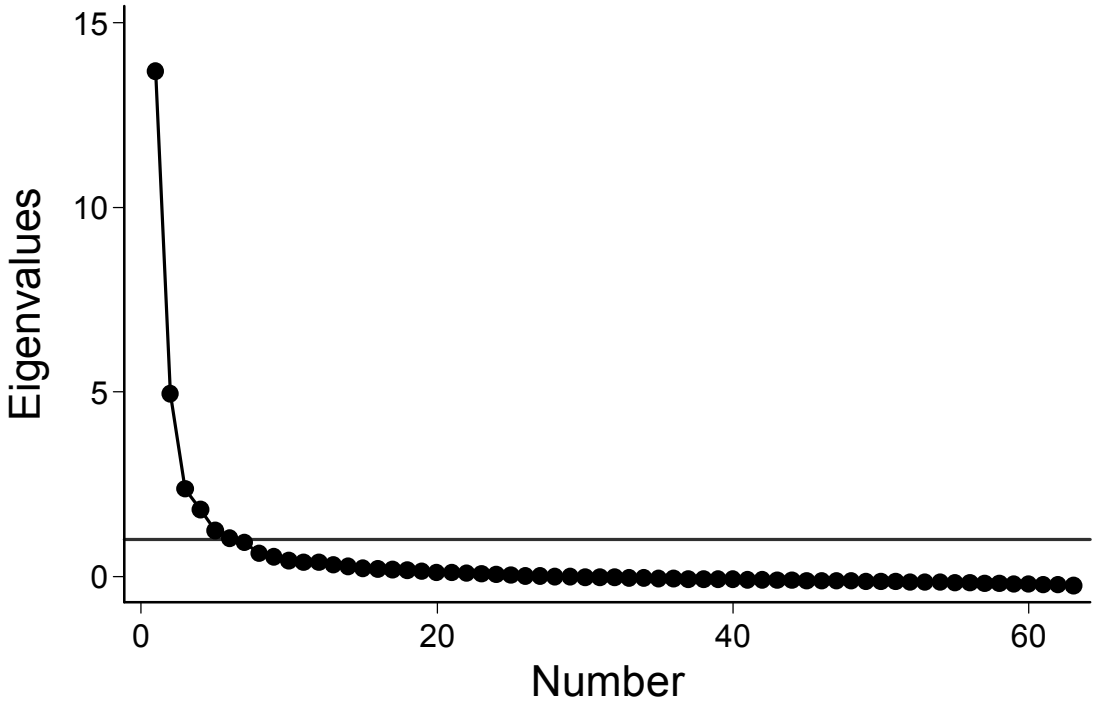
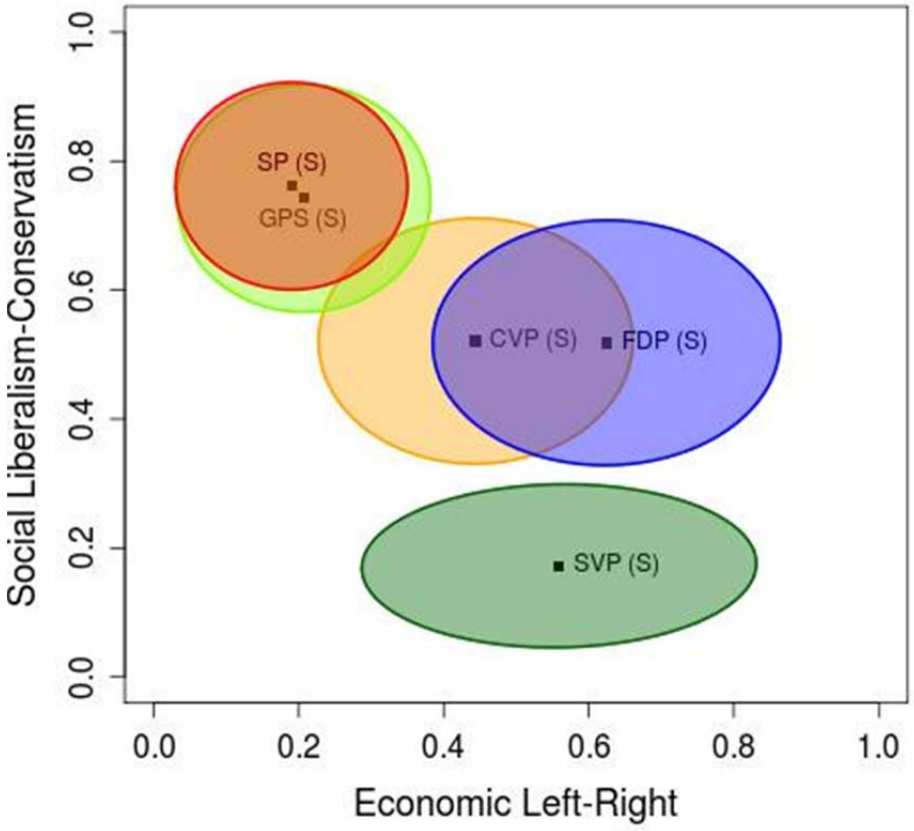
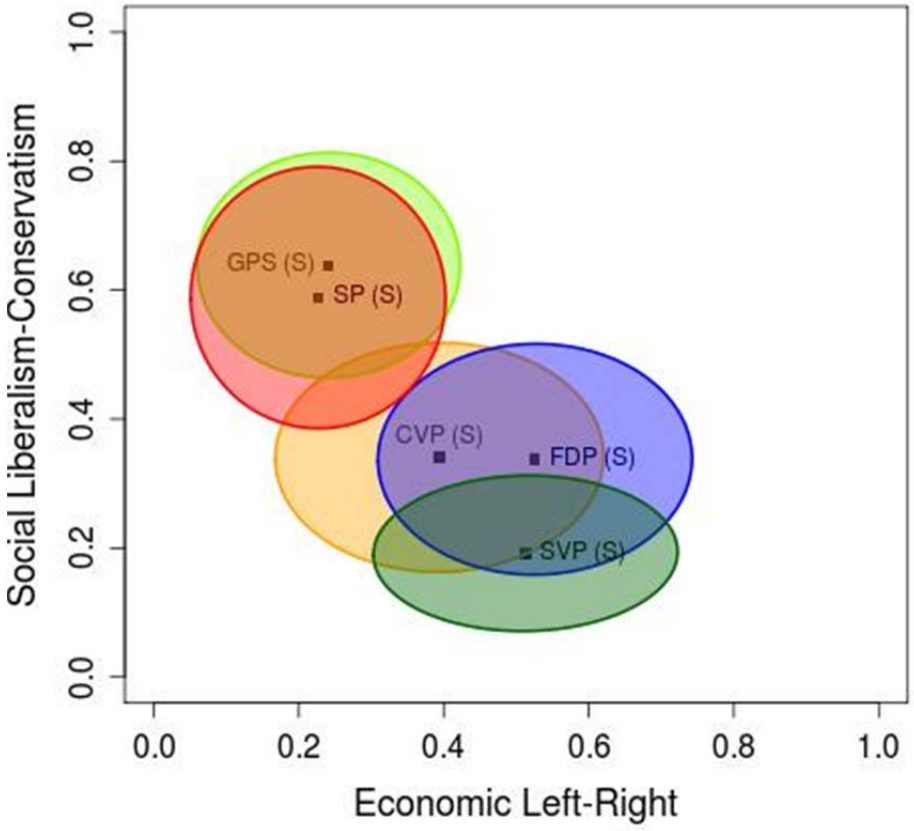


Figure 4: Party Supporters within the Ideological Space



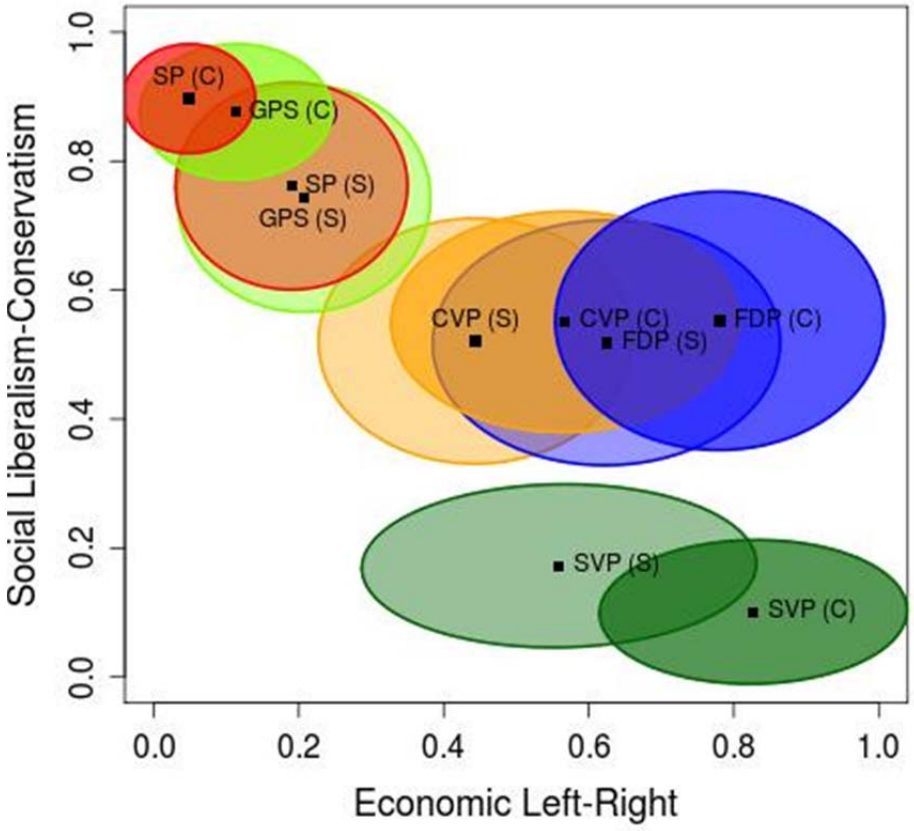
Note: the (S) denotes party supporters.

Figure 5: Party Supporters within the Ideological Space (SELECTS)



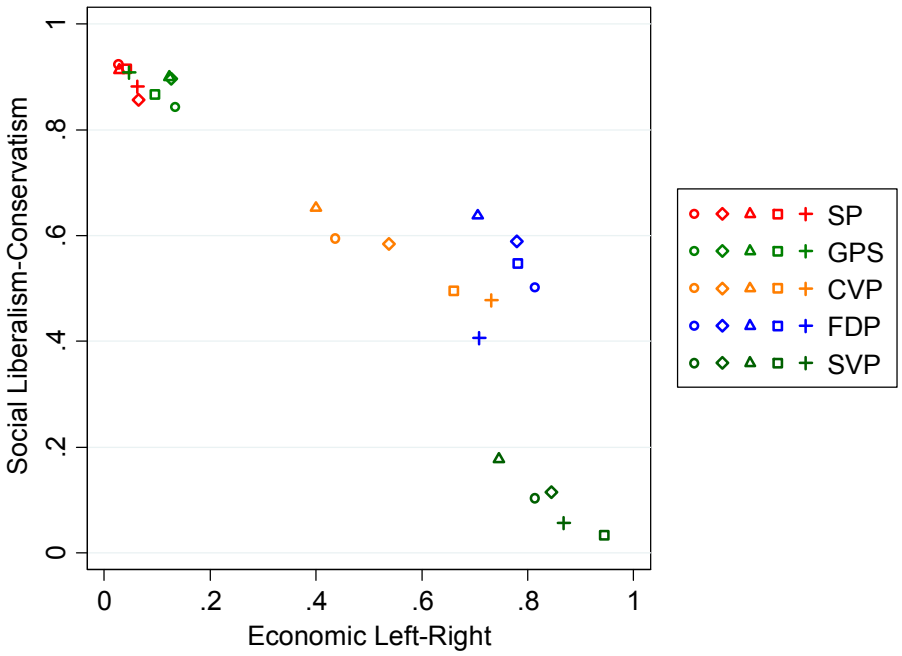
Note: the (S) denotes party supporters.

Figure 6: Candidates vs. Party Supporters



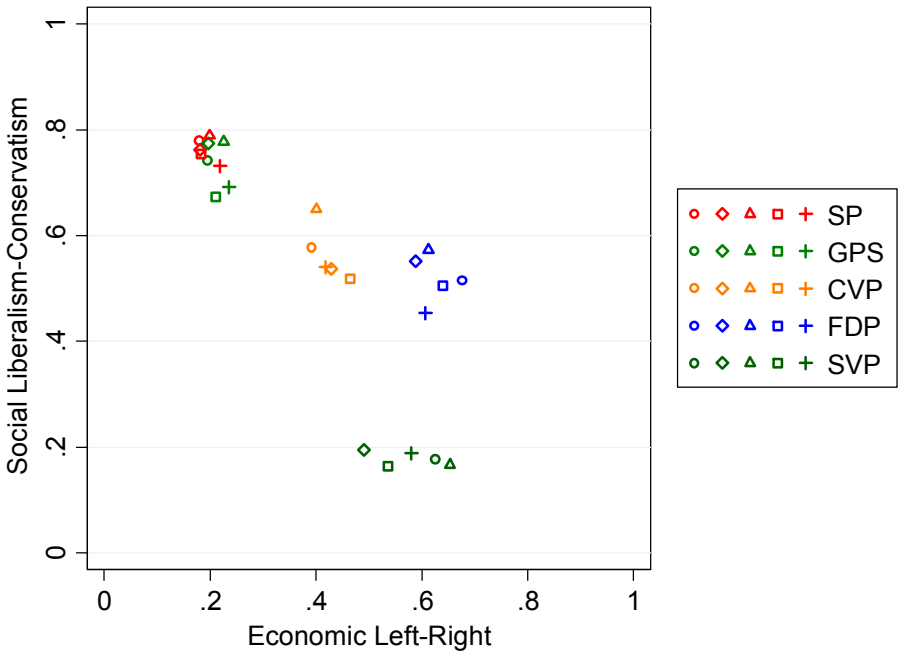
Note: the (S) denotes party supporters; the (C) denotes candidates.

Figure 7: Cross-cantonal Comparison (Candidates)



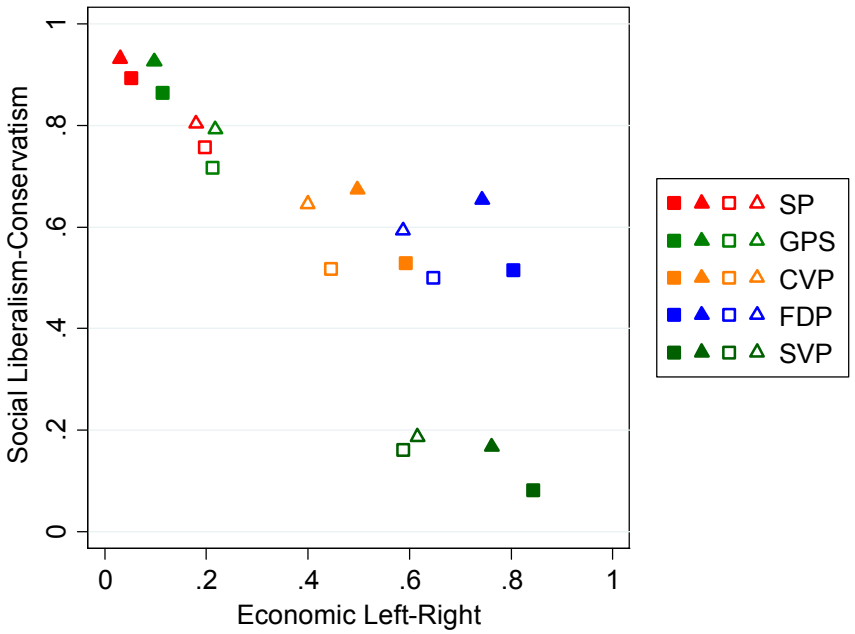
Note: circles = Zurich; diamonds = Bern; triangles = Vaud; squares = St. Gallen; pluses = Lucerne.

Figure 8: Cross-cantonal Comparison (Party Supporters)



Note: circles = Zurich; diamonds = Bern; triangles = Vaud; squares = St. Gallen; pluses = Lucerne.

Figure 9: Comparing Language Groups



Note: squares = german-speaking part; triangles = french-speaking part; filled = candidates; hollow = party supporters.